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Home away from home: Geography of information and local investors

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Home Away From Home: Geography of Information and Local Investors

Abstract – We develop a 10K-based measure of spatial variation in the availability of value-relevant information that reflects the multi-dimensional nature of firm location. Spatially distributed information generates location-based information asymmetries that affect institutional portfolio decisions and performance. Institutions overweigh firms with greater local economic exposure and earn superior returns on corresponding trades, even for firms not headquartered locally. These patterns are stronger among harder-to-value stocks. Consistent with local informational advantage, local investor performance increases with the local exposure of individual stock holdings and her portfolio as a whole, and more so when her portfolio is more heavily tilted toward local stocks.

1. Introduction

The economic interests of the typical U.S. public firm are geographically dispersed. A firm's corporate headquarters may be in one state while its plants and operations are located in other states, often far away from the headquarters. Similarly, customers and suppliers, R&D facilities, and other firm activities need not be concentrated around the headquarters.[1] When the economic interests of a firm are geographically dispersed, value-relevant information about the firm is also likely to be spatially distributed.

In this paper, we examine whether the spatial distribution of information about publicly traded U.S. firms affects the ownership patterns and portfolio performance of institutional investors. Our key conjecture is that the geographical variation in firms' local economic activities generates location-based information asymmetries among investors, which in turn influence the portfolio decisions and performance of those investors.

There are several reasons why the spatial distribution of firms' activities could result in information asymmetries among capital market participants. First, geographical dispersion could affect how efficiently the firm aggregates and reports value-relevant information. Geographically dispersed firms may not be able to collect and report information as efficiently as geographically concentrated firms (e.g., Aarland, Davis, Henderson, and Ono (2007), Giroud (2013)). As such, some local information may be lost in the aggregation process, giving investors in proximity of economically relevant non-headquarters (ER, henceforth) locations an informational advantage.

Second, local channels could provide investors at ER locations with more timely access to value-relevant information about the firm. For instance, several recent studies suggest that local news media act as external monitors (e.g., Miller (2006), Dyck, Volchkova, and Zingales (2008), and Dyck, Morse, and Zingales (2010)), which could provide an edge to local investors. Local social networks could be another important channel through which information about firms may reach local investors. For instance,

[1] For example, although Boeing Co. is headquartered in Chicago, Illinois, most of its operations are in the state of Washington. Similarly, Whole Foods Market is headquartered in Austin, Texas, but has a large number of stores and significant exposure in other states - e.g., Massachusetts, Florida, Colorado. Xerox Corp., which many perceive as a Rochester, New York company due to its large local presence, is headquartered in Stamford, Connecticut.

Cohen, Frazzini, and Malloy (2008) and Hong, Kubik, and Stein (2005) document that social networks explain investors' portfolio decisions and performance. Thus, it seems reasonable that local social ties of investors around the firm's activities could provide access to local agents - e.g., employees, customers, suppliers, etc. - who are likely to possess value-relevant information.

While proximity to local sources of information about firms' activities may result in local informational advantages, it is also possible that investors would have distorted perceptions as a result of such proximity. For example, while Engelberg and Parsons (2011) show that the coverage by local media outlets has a causal impact on local investor trading, Gurun and Butler (2012) show that conflicts of interests may hamper the role of local media as external monitors. Therefore, local investors could perceive an informational advantage that does not really exist. Whether due to location-dependent asymmetries in the availability of valuable information or merely in the perception of such availability, proximity to firm's economic activities would affect investors' portfolio decisions and give rise to geography-based market segmentation even when financial markets are integrated (e.g., van Nieuwerburgh and Veldkamp (2009)).

Testing our conjecture that the spatial distribution of firm-level information affects investor portfolio decisions requires us to map the geographical distribution of a firm's economic interests and measure the relative importance of each location for the firm. To do this, we need information about the geographical dispersion of plants, operations, R&D facilities, retail outlets, and other value-relevant activities and events. Unfortunately, this information is not reported in a systematic manner. We overcome this hurdle by performing a textual analysis of a firm's annual financial reports (10-K) to identify U.S. states that are economically relevant to that firm. Similar to García and Norli (2012), we measure a firm's *10K-based geographical dispersion* with the number of unique states cited in its 10-K. We refer to the non-headquarters locations mentioned in the firm's annual report as its *ER states*. Then, we construct a novel measure of the relative importance of each state for each firm. We refer to this firm-state metric as a firm's *10K-based measure of local exposure*, which is defined as the number of mentions of a state in the firm's 10-K divided by the total number of mentions of all U.S. states in the same report.

Our empirical analysis relies on the premise that mentions of U.S. states in a firm's annual report identify locations where the firm has meaningful economic interests that are material to the firm's performance. The parsing algorithm, however, cannot identify the specific nature of the firm-state link and the resulting citation share measures may be noisy. Hence, before proceeding with our main analysis, we examine whether the identification of ER states and their citation shares are associated with the availability of local value-relevant information.[2] The rationale underlying these tests is that firms sharing ER locations would face common local shocks and/or have systemic relations, which would generate a common local component in their stock returns as well as their operating performance and capital investments. Furthermore, important to our investigation, the 10K-based measure of local exposure should explain the systematic variation in the local component of firm performance.

Our tests provide robust support for the premise that the 10K-based measures of firms' local exposure reflect the potential availability of local information. First, using state portfolio regressions, we find that there is a strong link between firms that are headquartered in a given state and firms that have high local exposure but are not headquartered in that state. We find these local commonalities whether we examine the firms' stock returns, returns on assets, or capital expenditures. This analysis shows that recognizing the multi-dimensional nature of firm location allows for a more comprehensive examination of geography-based co-movement relative to previous studies that examine the stock return co-movement of firms sharing headquarters locations (e.g., Pirinsky and Wang (2006)).

Second, using stock-level regressions, we find that asset pricing models that include local market factors identified using the 10K-based measure of local exposure explain more of the time-series variation in returns than models that include only national market factors. This analysis is similar to those performed by Griffin (2002) and Hou, Karolyi, and Kho (2011) for evaluating global versus domestic factor models in an international context. We recast the tests in terms of national versus local (i.e., state) market factors, and find that the explanatory power of pricing models increases by at least 22 percent when the national factor is replaced with local factors identified using our method.

[2] We thank the Editor and referees for suggesting this line of analysis.

Third, we find that the 10K-based measures of firms' geographical dispersion and local exposure explain the systematic variation in the local component of stock returns. Specifically, stock returns are more sensitive to the local return factor when the corresponding state is mentioned in a firm's 10-K and this relation is stronger as the firm-state citation share increases. In sum, we conclude that a firm-state citation share serves as a useful proxy for a firm's local exposure.

In the next set of tests, we use the 10K-based measures of local exposure to answer two broad research questions related to our main conjecture. First, we examine whether geographical distribution of institutional stock ownership and portfolio decisions depends on the spatial variation in the firm's local exposure. Second, we investigate whether the availability of local information affects how institutional portfolio decisions are related to subsequent stock returns and portfolio performance. Our empirical tests yield several novel findings.

Our first key finding is that the excess local institutional ownership depends largely on the firm's local exposure, independent of distance from HQ location.[3] Indeed, complementing earlier local bias studies, we show that the average excess local ownership in the HQ state is in fact negative (= −1.62 percent) when the 10-K does not mention the state, and increases monotonically with citation share to 14.58 percent when the HQ state's citation share is over 50 percent. Similarly, the excess local institutional ownership is negative (= −0.22 percent) in non-HQ states not mentioned in the 10-K, and increases monotonically with citation share to 6.17 percent when the ER state's citation share is over 50 percent.

Second, similar to existing evidence for HQ state investors, institutional ownership levels and changes in the three non-HQ states with highest citation share (i.e., ER_{1-3}) predict subsequent stock returns. However, the link between stock characteristics and institutional ownership explains large part of the local ownership-based return predictability. Indeed, when we account for return differences associated with stock characteristics using the Daniel, Grinblatt, Titman, and Wermers (1997) method, we find that only the ownership changes of local institutions in ER_{1-3} states are able to predict future returns.

[3] While our study focuses on the multi-dimensional nature of *firm* location, other recent studies by Pool, Stoffman, and Yonker (2012) and Shu, Sulaeman, and Yeung (2012) examine the multi-dimensional nature of *investor* location and find that an investor's portfolio decisions are related to where she was born and/or went to college, in addition to where she currently resides.

This evidence is consistent with institutions in those states having a local informational advantage.

Third, the effect of a firm's local exposure on local investors depends heavily on firm characteristics that are typically associated with greater difficulty in valuing the firm and, thus, greater information asymmetry among investors. Specifically, we find that the direct link between the firm-state local exposure and excess local institutional ownership is stronger when the firm is young or small, or has less liquid stocks, higher return volatility, or higher return skewness. Moreover, consistent with a more valuable local informational advantage, the direct link between institutional ownership changes at ER_{1-3} locations and future returns is stronger among these harder-to-value stocks.

In the last part of the paper, we conduct a series of portfolio-level tests to complement our firm-level analysis. Portfolio-level analysis allows for a direct comparison between our findings and those in previous studies that quantify the holdings and performance of institutional investors conditional on their distance from firm HQ (e.g., Coval and Moskowitz (2001)). More importantly, shifting the focus to investor portfolios allows us to test whether the performance of local institutions depends on the degree of local exposure of their portfolio holdings. Consistent with our firm-level results, we find that institutional investors allocate disproportionately high portfolio weights to local ER_{1-3} stocks and experience superior risk-adjusted returns on their local ER_{1-3} holdings and trades (i.e., holdings changes).

Importantly, the performance of institutional investors' local ER portfolios depends directly on the potential availability of local information, both at the level of the *individual* holding and of the local portfolio as a *whole*. Specifically, we find that institutional performance in local ER_{1-3} stocks is higher when the firm's local exposure is higher, i.e., the 10-K citation share of the investor's state is higher. Further, local ER_{1-3} institutional portfolios have better performance when the portfolio as a whole has higher and more homogeneous local exposure, i.e., when the portfolio firms have high mean and low standard deviation of the investor's state's citation share. This evidence suggests that an investor may be able to exploit local information about some local firms in her portfolio to trade profitably on other local stocks, potentially due to commonalities among firms that share ER locations. Last, consistent with the notion that valuable access to local information drives institutional investors' local ER bias, the relation between local exposure and the performance of local ER_{1-3} subportfolio is stronger when the overall portfolio tilts more heavily toward local ER_{1-3} stocks.

These findings make important contributions to the local bias literature and the emerging literature in finance that recognizes the importance of geography. Our study is the first to show that the institutional local bias phenomenon is not exclusive to firms' HQ locations. Rather it is typical of locations where value-relevant information about a firm may be available. Indeed, complementing previous studies of local excess ownership around HQ locations (e.g., Coval and Moskowitz (1999), Baik, Kang, and Kim (2010)), we show that even the local HQ bias largely depends on a firm's local exposure in its HQ state. Moreover, consistent with our main conjecture, we demonstrate that the local institutional bias in economically relevant locations away from the HQ state is due to a local informational advantage. Further supporting this inference, we show that the availability of local information has the largest impact on institutional ownership and is most valuable amongst harder-to-value stocks.

Our second contribution to the local bias literature results from the analysis of local investor portfolios conditional on the local exposure of the investor holdings. We demonstrate that an investor's ability to earn superior returns on her local investment depends directly on the degree of local exposure of the individual stock as well as of her portfolio as a whole. In conjunction with our validation tests, these results suggest that an investor may be able to exploit information about some local firms in her portfolio to trade profitably on other local stocks.

Overall, we conclude that the spatial distribution of information about firm value generates meaningful location-based information asymmetries, which institutional investors exploit in their portfolio decisions. More broadly, our findings highlight the importance of recognizing the multi-dimensional nature of firm location and the consequent variation in the local availability of information. In this regard, the evidence in the first part of this study provides strong indication that our 10K-based measure of local exposure should prove useful in future research where local information generation plays a central role, including geography-based investment, asset pricing, and corporate finance studies. For example, recognizing that the economic interests of the typical multinational corporation span the globe, it would seem natural to extend our asset-pricing analysis to an international context.

2. Data Sources and Summary Statistics

In this section, we discuss our main data sources and present the sample summary statistics for the 10K-based measures of geographical dispersion and local exposure. Table 1 provides a concise description of all the variables and data sources used in our empirical analysis.

2.1. 10K-Based Firm Location Data

Our first main data source is the set of annual financial reports filed with the U.S. Securities and Exchange Commission (SEC) between 1998 and 2008, and stored on the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. We retrieve 144,071 unique firm-year filings for this period from EDGAR.[4] For the same period, we retrieve 76,403 firm-year observations with identifiable headquarters locations in the US from the historical header files of Compustat-CRSP merged database (CCM). After merging the two files, our sample includes 64,405 unique firm-year observations with non-missing geographical data for the 1998-2008 period.

Sections 13 and 15(d) of the Securities Exchange Act of 1934 require companies with more than $10 million in assets and whose securities are held by more than 500 individuals to file an annual report (Form 10-K) to provide a comprehensive overview of the company's business and financial condition. Although this standardized form contains four parts and 15 schedules, for the purpose of our analysis, similar to García and Norli (2012), we focus on Items 1, 2, 6, and 7. Item 1 summarizes the general development of the business, its subsidiaries, and any predecessor(s) during the prior five years, as well as the structure and conditions of the firm's industry. Item 2 lists the location and general characteristics of the principal physical properties of the company. Item 6 includes selected financial data to highlight trends in the firm's financial condition and operating performance. Finally, Item 7 includes the management's discussion

[4] While we refer to annual reports as 10-K forms throughout the paper, we collect and employ data from three types of forms: 10-K, 10-KSB, or 20-F. The latter two forms correspond to small businesses and foreign issuers, respectively.

and analysis (MD&A) of the company's performance.[5]

Like García and Norli (2012), we use a computer-based parsing algorithm to identify U.S. states mentioned in the relevant sections of the 10-K filings. We refer to the *number of cited states* as the *10K-based measure of geographical dispersion*. In addition to this measure, we develop a new measure that reflects the frequency with which the relevant sections mention each U.S. state or Washington D.C. In particular, we use the citation counts to compute the *citation share* of each location in each firm's annual financial report.[6] The firm-state citation share is defined as the number of times a U.S. state is cited divided by the total number of citations across all U.S. locations. We refer to this firm-state metric as the *10K-based measure of local exposure*.

Panel A of Table 2 presents sample summary statistics of the 10K-based measures of firm geographical dispersion and local exposure. The average firm in our sample mentions eight U.S. states (median is five). While headquarters states tend to have relatively high citation shares (mean = 0.414, median = 0.368), the citation share of the most economically-relevant state away from headquarters (henceforth, ER_1) tends to be large as well (mean = 0.216, median = 0.176). Moreover, the three most economically-relevant states away from headquarters (henceforth, ER_{1-3}) make up about half of the total number of citations (mean = 0.491, median = 0.500) in the typical firm-year. These summary statistics suggest that a typical firm is likely to have large presence and visibility in non-headquarters states. Even though we exclude international locations, ER_{1-3} states are often located far, on average more than 1,000 miles away, from the firm's headquarters.

Although the dispersion of firms' economic interests across the U.S. states can vary over time, if our 10K-based measure is meaningful, it should not change significantly from year-to-year. Consistent with this expectation, we find that firm-state citation shares are quite persistent.[7] In about two-thirds of

[5] Appendix A provides more details on the information contained in the relevant sections of the annual financial reports, while Appendix B provides sample excerpts from some 10-K forms filed during the 1998 to 2008 sample period.

[6] Our parsing algorithm would miss instances where the 10-K filing mentions the city but not the state. We would also be unable to capture cases in which the 10-K filings use state abbreviations. Inspection of a randomly selected set of filings indicates that both cases are rare. Further, there is no reason to believe that certain types of firms or firms located in certain states are more likely to abbreviate states or mention only city names in their reports. Thus, the citation counts may be noisy but the relative frequency measure across firms would not exhibit a systematic bias due to these exclusions.

[7] For brevity we do not tabulate these results.

observations, the most economically relevant state for a firm (i.e., ER_1) in a given year is one of the top three economically-relevant states for the firm (i.e., ER_{1-3}) in each of the previous three years. Further, in more than 90 percent of observations, a firm's ER_1 state in a given year is an ER_{1-3} state at least once in the previous three years.

To further assess the economic validity of our 10K-based measures, Panels B and C of Table 2 report summary statistics for various subsamples based on firm size and industry affiliation. Specifically, in Panel B, we report mean *Num States Cited*, *HQ State Citation Share*, and *Citation Concentration* by size terciles. Consistent with economic intuition, firms' geographical dispersion increases monotonically with firm size. By the same token, firms' HQ state citation share and, more generally, their citation share concentration across the U.S. states decrease monotonically with size.

Panel C reports similar statistics for the Fama-French 12-industry classification. We find that Financial and Business Equipment firms tend to be most concentrated, whereas Telecommunication and Retail firms are most dispersed. Overall, these summary statistics provide *prima facie* evidence that the 10K-based measures of geographical dispersion and local exposure are economically meaningful.[8]

2.2. Other Data Sources

Our second main data source is the set of quarterly common stock holdings of 13(f) institutions compiled by Thomson Reuters. We identify the institutional investor location (i.e., zip code) using the *Nelson's Directory of Investment Managers* and by searching the SEC documents and web sites of institutional managers. We match these institution location data with 10K-based measures from the annual report corresponding to the reporting period ending in the preceding calendar year. For example, for a firm whose annual reporting period ends in December 2000, the information in the corresponding 10-K is used to develop the firm's 10K-based measures that are employed in our analysis for 2001. We use this approach to avoid potential look-ahead bias in our returns-based tests.[9]

[8] Section 3 presents more formal tests of whether the 10K-based metrics provide a meaningful measure of the availability of local information about firm value.

[9] While this approach may be too conservative for firms that significantly change their exposure across states from one year to the next, the firm-state citation share and citation share rankings are quite persistent, as previously discussed.

In addition to the two main data sources, we use several other standard data sets. We obtain price, volume, return, and industry membership data from the Center for Research on Security Prices (CRSP). The firm headquarters location data are from Compact Disclosure (where available) and CRSP-Compustat merged (CCM) historical header file. We obtain monthly time series of the market (RMRF), size (SMB), value (HML), and momentum (UMD) factors from Kenneth French's web site.[10] We obtain the performance benchmarks for computing characteristic-adjusted stock returns from Russell Wermers' web site.[11]

To match the 10K-based measures with the other databases, we use the Central Index Key (CIK) that all entities registered with the SEC are uniquely assigned. Matching the CIK in the firms' 10-K filings with the CCM historical header file allows matching of the annual 10K-based location data with all other databases.

3. Citation Share and Economic Connections

Our main empirical tests are based on the key premise that the 10K-based measures of geographical dispersion and local exposure are meaningful proxies for the availability of local information about firm value. Therefore, we begin our analysis by assessing the validity of this premise. Our main objective is to determine whether our 10K-based measures do indeed identify economically meaningful firm-state links. We follow two related but distinct approaches. First, we examine the correlations in stock returns and operating fundamentals of state-level portfolios of firms with overlapping locations (i.e., HQ and ER_{1-3} portfolios). Second, we examine whether the 10K-based measures of local exposure are correlated with market-based measures of firms' exposure to local factors.

Therefore, we opt to err on the side of caution with respect to the look-ahead bias and use potentially stale location data, which in principle should work against finding significant results.

[10]The web site is http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

[11]The web site is http://www.smith.umd.edu/faculty/rwermers/ftpsite/Dgtw/coverpage.htm.

3.1. Correlations among Returns of Portfolios Sharing State Locations

To begin, we examine whether there is a local component in stock returns when firms' local exposure is identified based on our 10K-based measures. This investigation is similar to existing studies of local return co-movement (e.g., Pirinsky and Wang (2006)), but our tests do not focus on the co-movement among stocks in the same headquarters location. Rather, we examine whether there is co-movement among firms with overlapping HQ and ER_{1-3} locations. More precisely, we test whether the stock returns of firms headquartered in a given state (i.e., HQ portfolio) co-move with the returns of firms that are *not* headquartered in the state but for which the location is an ER_{1-3} state (i.e., ER_{1-3} portfolio).

We form two state-level portfolios: (a) firms headquartered in state s and (b) firms not headquartered in state s, but for which state s is an ER_{1-3} state. To assess the co-movement in the returns of these portfolios, we estimate the following state-level time-series regression model:

$$
\begin{aligned}
(1)\ Return_{ER_{1-3},s,t} \quad = \quad & a_{i,t} + b_{HQ} * Return_{HQ,s,t} \\
& + b_{MKT} * MKT_t + b_{SMB} * SMB_t + b_{HML} * HML_t + b_{UMD} * UMD_t \\
& + b_{StateMktCap} * State\ HQ/ER\ Firms'\ Total\ Mkt\ Cap_{s,t} \\
& + b_{StateNumFirm} * State\ Num\ HQ/ER\ Firms_{s,t} + e_{i,t},
\end{aligned}
$$

where $Return_{ER_{1-3},s,t}$ is the monthly return of the portfolio of firms not headquartered in state s, but for which state s is an ER_{1-3} state; $Return_{HQ,s,t}$ is the monthly return of the portfolio of firms headquartered in state s; MKT_t, SMB_t, HML_t, and UMD_t are the monthly market, size, value, and momentum return factors, respectively; $State\ HQ/ER\ Firms'\ Total\ Mkt\ Cap_{s,t}$ is the aggregate equity market capitalization of firms for which state s is either the HQ or ER_{1-3} location; $State\ Num\ HQ/ER\ Firms_{s,t}$ is the number of firms for which state s is either the HQ or ER_{1-3} location.[12] All return indexes are based on monthly stock returns in excess of the risk-free rate. We estimate separate state-level time-

[12] We include the last two terms in equation (1) to capture the potential supply and demand effects of local capital (Hong, Kubik, and Stein (2008)). Our results are not affected if we exclude these terms from the model.

series models, and report cross-state mean regression estimates and test statistics in columns (1)-(3) of Panel A of Table 3.

The first column in Panel A of Table 3 reports the estimates based on value-weighted local portfolio returns. The estimated coefficient on the local HQ portfolio (b_{HQ}) is positive and significant. This evidence indicates that there is a local component in the portfolio returns of firms with high local exposure but no HQ in the state, i.e., firms for which the location is an ER_{1-3} state.

For comparison, column (2) in Panel A of Table 3 reports the results of a placebo test where we examine the correlation between the local HQ portfolio and the portfolio of firms for which the state is not (very) relevant. The dependent variable in column (2) is $Return_{NoER_{1-3},s,t}$, which is the monthly return of the portfolio of firms not headquartered in state s and for which the location is not an ER_{1-3} state.[13] In contrast to the positive co-movement documented in column (1), the returns of firms with *no* ER_{1-3} exposure in state s are not correlated with the returns of firms whose HQ are in state s.

In column (3), we replace the value-weighted local portfolios with citation share-weighted local portfolios. Specifically, stocks in the local HQ and ER_{1-3} portfolios are weighted by the state citation shares in the firms' 10-K filings, so that firms with greater local exposure receive more weight. The correlation between the local HQ and ER_{1-3} portfolios is again positive and significant, as in column (1). Moreover, the estimated b_{HQ} is significantly higher than in column (1), where the portfolio returns are weighted by market capitalization. This finding suggests that the firm-state citation share reflects incremental information about a firm's exposure to a particular state.

For robustness, we re-estimate the relation between state-level portfolio returns using Fama-MacBeth (1973) method. We report the time-series mean coefficient estimates of these monthly cross-sectional (i.e., cross-state) regressions in columns (4)-(6) of Panel A of Table 3. In this case, we exclude the national return factors because they are constant in each cross-section. The evidence from this alternative estimation approach is in line with the earlier results, which suggests that our findings are robust.

Overall, the evidence in Panel A of Table 3 is consistent with the existence of a state-level local

[13] The No ER_{1-3} portfolio for state s is the complement of the HQ and ER_{1-3} portfolios with respect to the market portfolio.

component in the returns of firms that have high exposure to a state. The source of this local commonality in stock returns could be i) a local commonality in fundamentals, such that the returns of firms sharing economically relevant locations co-move more strongly due to local correlations in cash-flows; and/or ii) a local commonality in investor bases/trading.

3.2. Correlations among Fundamentals of Portfolios Sharing State Locations

In Panel B of Table 3, we test whether there is local commonality in firm fundamentals. Rather than study stock return correlations as in Panel A, we examine the correlation in operating performance and capital expenditures between portfolios of (a) firms with HQ in state s and (b) firms for which state s is an ER_{1-3} state. Specifically, we estimate the following regression model using state-level portfolio indexes of local firms:

$$
\begin{aligned}
(2)\ Index_{ER_{1-3},s,t} \quad = \quad & a_{i,t} + b_{HQ} * Index_{HQ,s,t} \\
& + b_{MKT} * Index_{MKT,t} \\
& + b_{StateMktCap} * State\ HQ/ER\ Firms'\ Mkt\ Cap_{s,t} \\
& + b_{StateNumFirm} * State\ Num\ HQ/ER\ Firms_{s,t} + e_{i,t},
\end{aligned}
$$

where $Index_{ER_{1-3},s,t}$ is the operating performance or capital expenditures index of firms for which state s is an ER_{1-3} state; $Index_{HQ,s,t}$ is the corresponding index of firms headquartered in state s; $Index_{MKT,t}$ is the corresponding index of the entire population of Compustat firms; $State\ HQ/ER\ Firms'\ Total\ Mkt\ Cap_{s,t}$ and $State\ Num\ HQ/ER\ Firms_{s,t}$ are as defined above. Similar to models (3) and (6) of Panel A, the local portfolio indexes, $Index_{ER_{1-3},s,t}$ and $Index_{HQ,s,t}$, are weighted by firm-state citation share.

The index measures are based on quarterly sales-to-assets in columns (1) and (4), EBITDA-to-assets in columns (2) and (5), or CAPEX-to-assets in columns (3) and (6). In all cases, the numerator (i.e., sales, EBITDA, or CAPEX) is measured as of the reporting quarter-end and the denominator (i.e., assets) is measured as of the beginning of the quarter. Similar to Panel A, the first three columns (labeled

State-Level Time-Series) report cross-state mean coefficients and associated t-statistics of state-level time-series regressions, while the last three columns (labeled *Quarter-Level Cross-Sections*) report the time-series mean coefficients of Fama-MacBeth (1973) quarterly cross-sectional regressions.

The results in Panel B of Table 3 are consistent with the stock return correlations documented in Panel A. Across all measures and estimation approaches, we find that there is a positive and significant correlation between the fundamentals of ER_{1-3} and HQ portfolios.[14] This evidence suggests that local commonalities in firm fundamentals at least partially explain the local commonality in stock returns.

Overall, the results in Table 3 support the notion that mentions of state locations in firms' 10-K filings are economically meaningful, as they identify the firms' exposure to state-level factors. Consequently, the 10K-based measure of local exposure would be associated with the availability of local information about firm value.

3.3. Asset Pricing Models Including Local Return Factors

Next, we conduct two related firm-level analyses to assess the potential link between the 10K-based measure of local exposure and local return factors. First, we examine the performance of asset pricing models that include local return factors identified on the basis of our 10K-based measure of local exposure. Second, we examine whether the firm-state 10K-based measures explain the variation in market-based (i.e., stock return-based) measures of firms' exposure to local factors.

Our local factor pricing analysis is similar to the analysis that Griffin (2002) and Hou, Karolyi, and Kho (2011) conduct in international settings. Instead of using global and national factors as in those studies, we employ national and local market factors. In particular, we estimate firm-level pricing models based on 36-month rolling-window regressions that include various formulations of the market index. We begin with the standard CAPM model, where the proxy for the market index is the value-weighted mean stock return of all firms headquartered in the U.S. This model specification, which we refer to as model

[14] For brevity, we do not report the results for value-weighted local or non-local portfolios. However, it is worth noting that the value-weighted indexes yield patterns consistent with the stock return results in Panel A. While we find positive but smaller correlations using value-weighted local portfolios, there is no evidence of direct relations when we use non-local portfolios.

(1) in Panel A of Table 4, assumes that the US market is *fully integrated*.

Alternatively, we assume that the US market is *fully segmented* at the state-level, and that the importance of each firm in the local market is captured by the 10K-based measures of local exposure. We operationalize this alternative approach by replacing the US market index with two distinct local market indexes that are constructed using only firms that share the relevant state location with the firm being priced: (i) HQ index, the *local* stock return index of firms that share the HQ state with the firm, and (ii) HQ/ER_{1-3} index, the *local* stock return index of firms whose HQ or ER_{1-3} locations are in the firm's HQ or ER_{1-3} states. In Panel A of Table 4, we refer to these as models (2) and (3), respectively.

Last, we assume that the US market is *partially integrated* by adding a second factor that reflects the returns of firms that do *not* share relevant state locations with the firm being priced. This model includes the HQ/ER_{1-3} index and the Non HQ/ER_{1-3} index. The non-local index is the complement of the local index, i.e., it includes all firms that do not have HQ or ER_{1-3} locations in the HQ or ER_{1-3} states of the firm being priced. We refer to this specification as model (4) in Panel A of Table 4.

Panel A of Table 4 reports various measures of goodness of fit for each of these models: the mean and median of absolute pricing errors ($|a|$), value-weighted absolute pricing errors (VW $|a|$), and explanatory power (Adj. R^2) across all models. Following Griffin (2002), we use value-weighted indexes, in Panel A1, or alternatively equal-weighted indexes, in Panel A2. Further, in the last six columns of Panel A, we augment all the models by adding the national Fama and French (1992) and Carhart (1997) factors.

We find that pricing errors are generally lower for models that assume segmented or partially integrated US markets than models that assume a fully integrated market. However, there is no clear ranking between the first two types of models. In addition, the explanatory power of the pricing models generally increases as we replace the national index with either the local HQ/ER_{1-3} index alone or a combination of the local and non-local indexes. In particular, Panel A1 shows that the adjusted R^2 increases by at least 22 percent (i.e., from 9.41% to 11.49%) when we replace the value-weighted national index with a combination of local and non-local indexes. By contrast, we observe no improvement in the performance of the pricing model when we use the local HQ index alone. In sum, pricing models that include local factors identified using the 10K-based measure of local exposure perform better and explain more of the time-series variation in firm-level returns than models that include the national market factor or the HQ local factor.

3.4. Relation between Market- and 10K-based Local Exposure Measures

The contrast between models (1) and (3) or (4) and (6) in Panel A of Table 3 suggests that the degree of local exposure reflected in the firm-state citation share, as opposed to the mere fact that a state is mentioned, is important in capturing the local component in stock returns. In Panel B of Table 4, we directly examine the link between the 10K-based measure of local exposure and the local component in stock returns. To capture the local component in returns, we generate two firm-state market-based measures of local exposure. Our approach is similar to the method used in the local return factor tests discussed in the previous section.

First, for each firm-yearend we estimate the following four-factor regression model using a 36-month rolling window:

$$(3)\ RetRF_{i,t} = a_{i,t} + b_{MKT,i,t} * VWMktRF_t + b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t},$$

where $RetRF_{i,t}$ is firm i's stock return in excess of the risk free rate in month t and the independent variables are the Fama and French (1992) and Carhart (1997) monthly return factors. This specification is identical to model (1) in Panel A of Table 4.

Then, separately for each firm-yearend-*state*, we estimate an augmented model where we add the state local factor. We construct the local factor using the excess returns of local firms, defined as firms for which the state is an ER_{1-3} or HQ location. Consistent with the earlier analysis, we adopt two alternative weighting schemes for the local portfolio: value-weighting and citation-share-weighting.

Specifically, we estimate the following two models:

$$(4a)\ RetRF_{i,t} = a_{i,t} + b_{LOC,i,t,s} * VWLocalRF_{-i,t,s} + b_{MKT,i,t} * VWMKTRF_t + b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t},$$

and

$$(4b)\ RetRF_{i,t} = a_{i,t} + b_{LOC,i,t,s} * SWLocalRF_{-i,t,s} + b_{MKT,i,t} * VWMKTRF_t + b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t},$$

where $VWLocalRF_{-i,t,s}$ is the value-weighted average excess return of the portfolio of local firms in state s excluding firm i, and $SWLocalRF_{-i,t,s}$ is the citation share-weighted average of the same local portfolio. Equation (4a) is similar to model (3) in Panel A, except for the inclusion of the national index and the state-specific nature of the model.[15]

Finally, using the firm-year-state estimates from models (4a) and (4b), we develop two market-based measures of local exposure: *Local Beta*, the firm-year-state estimate of $b_{LOC,i,t,s}$; and *Delta* R^2, the incremental R-squared from the addition of the local factor in models (4a) or (4b) relative to the baseline model (3). With these two measures, we aim to capture a firm's exposure to the local factor. The first measure reflects the stock's return co-movement with stocks that have local exposure in the state according to the 10K-based measure. The second measure represents the incremental fraction of the stock's return variation that is explained by the state-level return factor. The main distinction between the two measures is that the first is directional since positive co-movement results in positive b_{LOC} and negative co-movement results in negative b_{LOC}, while the second is not as both positive and negative co-movement will result in higher *Delta* R^2.

In our tests, we regress the firms' market-based measures of local exposure on the 10K-based geog-

[15] We include the national index to ensure that our measures capture the *incremental* effect of the addition of the local index to the traditional four-factor model.

raphy measures. In addition to a *HQ State* indicator that captures the firm headquarters state location, we include the following two 10K-based measures of local exposure: (i) a *Cited State* indicator that is equal to one for states mentioned in the firm's 10-K, and (ii) the continuous firm-state *Citation Share* variable. The first measure reflects whether the state is mentioned at all in the firm's 10-K, while the second captures the relative intensity with which the state is mentioned in the report. By construction, both variables are equal to zero when the state is not cited in the relevant sections of the firm's 10-K.

Panel B of Table 4 presents the results of these tests. Specifically, the table reports eight sets of mean regression estimates and corresponding test statistics that differ by whether we: (i) estimate (a) cross-firm regressions at the year-state level or (b) cross-state regressions at the year-firm level; (ii) construct the local factor for the market-based measure using (a) value-weighting or (b) citation share-weighting; and (iii) employ as the market-based measure (a) *Local Beta* or (b) *Delta* R^2.

The estimates from the various specifications provide strong and robust support for our fundamental premise that the 10K-based measure of local exposure explains the variation in market-based measures of local exposure, both within state-years/across firms and within firm-years/across states. Namely, when a firm's financial report mentions a state location, and does so more frequently, the firm's stock returns co-move more strongly with local returns. Across all specifications, we find that the citation share's effect is incremental and large relative to the discrete effect of a state mention. In fact, the citation share's effect is an order of magnitude larger than the discrete effect when we use citation share-weighting to calculate the local market factor.

Overall, the evidence in this section consistently supports the notion that the 10K-based firm-state measure of local economic exposure reflects the local component of firms' stock market and accounting performance. This finding in turn supports the premise of our main analysis that the 10K-based measure reflects the potential availability of local value-relevant information about a firm.

4. Firm Geography and Local Ownership

In this section, we use the 10K-based local economic exposure measure as a proxy for the availability of local information about firm value and examine how the spatial distribution of firm-level information affects institutional ownership patterns. Specifically, we examine the relation between *excess* state aggregate institutional ownership and the 10K-based firm-state measure of local exposure.

4.1. Univariate Results

Table 5 reports the mean firm-state *excess* local ownership for various location-based subsamples. We begin by replicating the results documented in previous studies that institutional investors around firms' HQ own disproportionately high fractions of the shares of those firms. We then present two novel results. First, we show that excess local HQ ownership depends largely on the firm-HQ state exposure as captured by the HQ state's citation share. For example, the average excess local ownership of investors in HQ states with citation shares between 20 and 50 percent is 8.35 percent, which is more than twice the average excess local ownership of investors in HQ states with citation shares below 5 percent but higher than zero. Moreover, the average excess local ownership is 14.58 percent when the HQ state's citation share is over 50 percent. In contrast, the average HQ local bias is negative ($=-1.62$ percent) when 10-K filings do not mention the firm HQ state.

Second, and more importantly, we find that the propensity to own disproportionately large fractions of shares of local firms is not a phenomenon exclusive to HQ states' institutional investors. The excess institutional ownership is also positive in ER states and increases monotonically with the firm's local exposure. For example, the average excess institutional ownership in ER states with citation shares between 20 and 50 (above 50) percent is 5.28 (6.17) percent, which is more than five (six) times the average excess local ownership of investors in ER states with citation shares below 5 percent but higher than zero.

It is also noteworthy that the link between the firm-state citation share and local ownership bias does not depend on the geographical proximity to the firm's HQ state. As the distance from HQ state increases, we do not observe a negative effect on ER states' excess ownership. In sum, these univariate results indicate that excess local institutional ownership is typical of states where the firm has local exposure independent of the firm's HQ location.

In Panel B of Table 5, we also document a monotonic relation between a firm's excess institutional ownership in ER states and the ordinal ranking of the states' citation shares. The average excess local ownership of investors in the non-HQ state with the highest citation share (i.e., ER_1 state) is 5.18 percent, which is more than four times the average excess local ownership in the state with the third highest citation share (i.e., ER_3 state) and almost 10 times higher than in ER_4 or ER_5 states. In light of this finding and the evidence in Table 2, which shows that HQ and ER_{1-3} states jointly account for 90% of the state mentions in a typical 10-K, we focus on these states in subsequent analyses in Sections 5 and 6.

4.2. Multiple Regression Analysis of Local Ownership

We perform a series of multiple regression tests to account for the heterogeneity in firm and state characteristics that may be related to the degree of excess local ownership and firm local exposure. In particular, we estimate Fama and MacBeth (1973) quarterly regressions of the local excess institutional ownership on the 10K-based measures, while controlling for firm characteristics and state-level heterogeneity using state fixed effects.

Table 6 reports the local ownership regression estimates. The evidence shows that, holding all else constant, firm-state excess institutional ownership is strongly related to the 10K-based measure of local exposure. In particular, the firm-state citation share is a significant determinant of the local excess institutional ownership. Moreover, its effect is notably large relative to the location-type fixed effects (i.e., *HQ State* and *Cited State*) - see model (2). Compared to the model that includes only US state fixed effects and state-type indicators - see model (1), we find that the firm-state citation share absorbs much of the *HQ State* and *Cited State* fixed effects. Namely, comparing the state-type coefficients across models (1) and (2) shows that the variation in firm-state citation shares accounts for almost half of the average *HQ State*'s effect and two-thirds of the average *Cited State*'s effect. Hence, the degree of local exposure is an important determinant of excess local ownership, both in absolute terms and relative to the location-type fixed effects.

In models (4) to (7), we add the market-based firm-state measures of local exposure to assess their explanatory power relative to the 10K-based measures. The estimates for models (4) and (5) show that the market-based measures explain excess local ownership in a way that is similar to the 10K-based measures. However, the economic and statistical significance of the market-based measures is either swamped (*Delta* R^2 regression) or reduced (Local Beta regression) when we include both types of local exposure measures in models (6) and (7).

Model (8) shows that the strong relation between citation share and excess local ownership is unaffected when we control for a large set of stock characteristics including all control variables used in Baik, Kang, and Kim (2010). The coefficient estimate for the HQ state indicator implies that the average excess local ownership in a non-cited HQ state is 2.390 percent higher, all else equal. Adding this effect to the *Cited State* and *Citation Share* effects, we find that the incremental excess local ownership in a cited HQ state with an average citation share (of 41.4%, from Table 2) is more than three times as large: 7.741 percent (=2.390% + 0.337% + 41.4% * 12.111%).

The large coefficient estimates on *Cited State* and *Citation Share* also highlight that ignoring the multi-dimensional nature of firm location results in a severe underestimation of the excess ownership of local institutions. In particular, all else equal, the incremental excess local ownership in an average ER_1 state is 2.953 percent (=0.337% + 21.6% * 12.111%), while the cumulative incremental excess local ownership in the average ER_{1-3} states is 6.958 percent (=3 * 0.337% + 49.1% * 12.111%).[16]

In sum, the evidence in Table 6 is consistent with our conjecture that the local institutional ownership patterns depend on the potential availability of local information about a firm, as reflected in our 10K-based firm-state measure of local exposure.

[16] As reported in Table 2, the mean citation share of ER_1 state is 21.6%, while the mean combined citation share of ER_{1-3} states is 49.1%.

4.3. Firm Characteristics, Citation Share, and Local Ownership

We next examine whether the relation between a firm's local exposure and its excess local ownership is more pronounced when access to local information is likely to be more beneficial. To test this conjecture, we add to our base specification interaction terms that capture the effect of the difficulty in valuing a firm on the relation between the firm's local exposure and its excess local ownership. Specifically, we examine interactions of the 10K-based measures of local exposure with the following firm characteristics: size, Amihud (2002) illiquidity measure, age, R&D intensity, idiosyncratic return volatility, idiosyncratic return skewness, and stock price. Because they are harder to value, we hypothesize that the direct relation between local exposure and excess local ownership would be stronger for smaller, more illiquid, younger, higher R&D, higher volatility, higher skewness, and lower price stocks.[17]

Table 7 reports the regression estimates for these augmented models, where we add the interactions to the full model (8) reported in Table 6. To highlight the typical negative sensitivity of non-local investors to these characteristics, we also report the parameter estimates for the relevant characteristics. Consistent with the logic of our tests, whereby non-local investors suffer a disadvantage when firms are harder to value, we find that they avoid smaller or younger firms, as well as stocks that are less liquid, have higher skewness, or higher volatility.

In direct contrast, the positive effect of the 10K-based measures of local exposure on a firm's excess local ownership is significantly stronger when the firm is harder to value. In particular, the regression estimates show that excess local ownership of institutional investors whose domicile state is mentioned in the firm's 10-K is higher for young, illiquid, highly volatile, highly skewed, and low priced firms. In addition to this effect, the sensitivity of local ownership to the degree of local exposure (i.e., firm-state citation share) is incrementally higher for those hard-to-value stocks.

Overall, the evidence in Table 7 is strongly consistent with our conjecture that a firm's local exposure has a stronger effect on its local ownership levels when the firm is harder to value because potential access

[17] Several earlier studies use similar proxies for the difficulty of valuing a firm (see among others, Jiang, Lee, and Zhang (2005); Zhang (2006); and Kumar (2009)).

to local information is more beneficial. More broadly, this evidence supports our conjecture that spatial variation in the availability of information about a firm is a key determinant of its local institutional ownership.

5. Local Ownership and Stock Returns

In this section, we examine whether the spatial distribution of firms' economic interests affects the relation between local ownership and stock returns. Our tests are similar to those in Baik, Kang, and Kim (2010), which show that local HQ institutional ownership levels and changes predict future raw returns.

5.1. Baseline Stock Return Regressions

To begin, we follow closely the approach in Baik, Kang, and Kim (2010, henceforth BKK). In particular, we regress subsequent quarter raw stock returns on the quarterly institutional ownership lagged levels and current changes, after separating institutions in two groups. The first group includes local HQ institutions, while the second includes all non-HQ institutions. We control for all stock characteristics included in BKK and estimate the models using the Fama-MacBeth (1973) approach. Model (1) in Table 8 includes ownership levels and changes of local HQ investors alone, as in BKK. Consistent with their results, we find that subsequent quarter returns vary directly and significantly with the local HQ ownership levels and changes. Then, in model (2), we again follow BKK and add the non-HQ institutional ownership levels and changes to the model specification.[18] Again consistent with their findings, the non-HQ ownership variables are not significant and their inclusion does not affect the local HQ parameter estimates.

In the remainder of Table 8, we examine in greater depth the role of non-HQ institutions by first separating them into two mutually exclusive sets: (i) *Local* ER_{1-3} institutions, and (ii) all remaining non-HQ institutions, which we label *Non-Local*. Then, we replace the non-HQ ownership variables

[18]Models (1) and (2) in Table 8 follow closely models (4) and (8) in Table 4 of Baik, Kang, and Kim (2010).

of model (2) with corresponding ones for each set of non-HQ institutions in models (3) to (5).[19] The estimates from model (3) indicate that the effect of non-HQ institutional ownership variables depends on the investors' likely access to local information about the firm. Specifically, the effects of the *Non-Local* ownership variables are not statistically significant, similar to the aggregate effects of non-HQ variables in model (2). In contrast, we find that both the ownership levels and changes of *Local* ER_{1-3} institutions are positively and significantly related to subsequent raw stock returns. Hence, consistent with our main conjecture, the investment decisions of non-HQ institutions with potential access to value-relevant local information predict future stock returns.

In addition to the control variables in BKK, we also include a control for firms' geographical dispersion in the spirit of García and Norli (2012). Specifically, we add an indicator variable that is equal to one when the firm's 10-K contains no mention of any non-HQ state. In line with the findings in García and Norli, this variable has a positive coefficient estimate. Thus, firms with more dispersed locations have lower returns, on average. More important for our purposes, however, our results on the effects of non-HQ ownership are robust to controlling for firms' geographical concentration as well as all other stock characteristics included in the model.

Our results so far are based on raw quarterly returns and do not account for risk. While our regression models control for numerous firm characteristics related to risk, there could be non-linearities in the relation between certain characteristics (i.e., size, B/M ratio, and past returns) and future stock returns that a linear regression specification may not accommodate. As a result, our inferences may be biased if location-dependent institutional portfolio decisions depend on stock characteristics. Therefore, in the last two columns, we control for differences across firms using characteristic-adjusted returns computed using the Daniel, Grinblatt, Titman, and Wermers (1997) method.

As shown in columns (4) and (5) of Table 8, this adjustment has a large effect on some key estimates. First, both local HQ ownership variables lose significance. The estimated coefficient on HQ ownership

[19]For the reasons explained at the end of Section 4, we shift our focus from the full set of cited states, as in Tables 5 to 7, to the top three non-HQ cited states, in Table 8 onwards. In previous versions of this paper, we used the top five non-HQ cited states instead, which yielded similar, but unsurprisingly weaker results.

levels drops between 50% and 65%, while the estimated coefficient on HQ ownership changes drops between 20% and 35%. Also, as a result, both coefficients are no longer statistically significant at conventional confidence levels. Similarly, the estimated coefficient on ER_{1-3} ownership levels drops by an even larger amount (between 80% and 95%) and is no longer statistically significant at conventional levels. Therefore, the local ownership levels regardless of the location-type and the HQ ownership changes do not predict future returns, once we account for firm characteristics more appropriately.

Notably, the predictive power of ER_{1-3} ownership changes with respect to future returns remains virtually unaffected when we use characteristic-adjusted returns. In fact, the corresponding coefficient estimate becomes somewhat larger (between 17% and 20%) and remains highly statistically significant, at the 1% confidence level. This effect is also economically large: a one standard deviation increase in the quarterly ER_{1-3} ownership change is associated with a 0.23% increase in characteristic-adjusted monthly returns. By comparison, the coefficient estimate for the change in ER_{1-3} ownership is more than three times as large as the corresponding estimate for the change in HQ ownership.

Overall, quarterly changes in ER_{1-3} ownership are the only location-dependent component of a firm's institutional ownership that displays a sizeable, significant, and robust relation with subsequent returns. This evidence suggests that local ER_{1-3} trades alone are likely to reflect a significant informational advantage - rather than the underlying link between firm characteristics and location-dependent institutional portfolio decisions.

5.2. Firm Characteristics and Local Ownership-Return Relation

In this section, we complement the analysis of local ownership in Table 7 by examining whether the local ER_{1-3} investors' informational advantage is more pronounced for harder-to-value stocks. Specifically, we test whether the direct relation between changes in local ER_{1-3} ownership and subsequent characteristic-adjusted returns is stronger for harder-to-value stocks. Table 9 reports the results of this analysis.

To conduct our tests, we augment the full model (5) in Table 8 by adding interaction terms between ER_{1-3} ownership changes and the same set of firm characteristics used in Table 7. To facilitate the economic interpretation of these interaction terms, we use indicator variables for the following firm-types: small (below-median market capitalization), illiquid (above-median Amihud illiquidity measure), young (stocks whose IPO occurred in the prior five years), R&D intensive (above-median R&D over asset ratio), volatile (above-median idiosyncratic stock return volatility), skewed (above-median idiosyncratic stock return skewness), and low priced (below-median stock price). For completeness, we also include interactions between these same indicator variables and the local HQ ownership changes.

Several notable patterns emerge in Table 9. First, the regression coefficient estimates for the standalone ER_{1-3} ownership changes indicate that the predictive power of this variable is mostly significant even for stocks with lower information asymmetry (e.g., large or liquid stocks).

Second, and more importantly, the regressions estimates for the ER_{1-3} interaction terms suggest that the predictive power of ER_{1-3} ownership changes is indeed significantly larger for stocks that are harder to value. For example, the estimated coefficient on the interaction between the small firm indicator and ER_{1-3} ownership changes (= 3.417) is similar in magnitude to the baseline coefficient estimate of the ER_{1-3} ownership change (= 3.507). This evidence implies that the predictive power of ER_{1-3} ownership changes for small stocks is approximately twice that for large stocks. With the exception of low-priced stocks, we observe similar patterns for all other harder-to-value characteristic indicators. In contrast, there is no consistent pattern in the coefficient estimates of the interaction terms associated with changes in local HQ ownership. With one exception (i.e., illiquid stocks), there is no evidence to support the idea that HQ investors' informational advantage may be significant among harder-to-value stocks.

Overall, the results in Table 9 imply that local ER_{1-3} investors enjoy a larger informational advantage among stocks that are harder to value. Combined with the results in Table 7, this evidence is consistent with the notion that the higher excess ownership of local ER_{1-3} institutions in harder-to-value stocks is likely due to a more valuable local informational advantage.

6. Institutional Portfolio-Level Analysis

In the last part of the paper, we shift the focus of our analysis from firm-level to investor portfolio-level. That is, instead of examining the relations between a firm's local exposure and its location-dependent institutional ownership or between a firm's location-dependent ownership and stock returns, we examine how an investor's location-dependent holdings and performance vary with the holdings' local exposure. Similar to Coval and Moskowitz (1999, 2001), this analysis allows us to quantify excess local holdings (i.e., local bias) at the investor-level and provides an opportunity to compare the performance of an investor's local and non-local holdings. The investor-level analysis is particularly useful because it allows us to examine directly the joint impact of location-dependent portfolio decisions and portfolio holdings' local economic exposure on local investor performance.

6.1. Portfolio-level Local Bias

Table 10 reports the mean local bias by stock location-type (i.e., HQ and ER_{1-3}) for various investor samples. Examining equal-weighted means, we find that the average institution in our sample allocates a disproportionately high portfolio weight to local stocks, independent of stock location-type. Although the magnitudes vary across subsamples, there is evidence of local bias in all subsamples of institutions defined using investor self-reported type or portfolio size.

The evidence is considerably different when we focus on dollar-weighted means to quantify the average portfolio local bias. At the aggregate level as well as across investor types and portfolio sizes, we find evidence of local bias only for ER_{1-3} stocks, with magnitudes comparable to the equal-weighted results. In contrast, there is no evidence of local HQ bias in the aggregate portfolio. This finding is due to the fact that large portfolios, which account for 20% of the institutions but almost 90% of the holdings, display no HQ bias.[20]

Overall, although local stocks receive disproportionately large weights in the portfolio of the average

[20] Our finding that large institutions have weaker local bias is consistent with previous evidence obtained using different samples, e.g., mutual funds during an earlier period in Coval and Moskowitz (2001).

investor, the local bias phenomenon is robust and pervasive only among local ER_{1-3} stocks. This evidence suggests that focusing on HQ locations while ignoring the geographically dispersed nature of firms' economic interests and value-relevant local information results in a substantial underestimation of the institutional local bias.

6.2. Performance of Local Portfolios

Next, we examine the performance of location-dependent investor subportfolios to determine whether the average investor's local overweighting is due to a local information advantage or familiarity bias. In particular, we divide each investor's quarterly portfolio into three mutually exclusive subportfolios: local HQ, local ER_{1-3}, and non-local (i.e., the rest). We then analyze the performance of each subportfolio using its raw and risk-adjusted return in the subsequent quarter. Table 11 summarizes the results for each subportfolio's quarter-end holdings (Panel A) or net quarterly changes in holdings (Panel B).

The evidence in Panel A of Table 11 is consistent with information-based local bias. In line with our earlier evidence, this is especially true for local ER_{1-3} subportfolios. The average investor's local ER_{1-3} subportfolio outperforms her non-local holdings by about 17-25 bps per month (with t-statistics above 3.2), depending on the choice of risk/characteristic adjustments. This effect is largest among institutions self-identified as investment companies and advisors, which make up more than half of our institutional investor sample. In contrast, the difference in performance between local HQ and non-local subportfolios is smaller in magnitude (about 4-7 bps per month on average) and not statistically significant at conventional confidence levels (with t-statistics between 1.08 and 1.59).

In Panel B of Table 11, we focus on the trading performance of the subportfolios to assess whether the informational advantage underlying the superior performance of local investments is due to arrival of new information. Given the quarterly frequency of their portfolio disclosures, we use net changes in quarterly holdings to measure (net) trading by our sample institutions during a quarter. We then measure the average performance of net changes in local/non-local holdings.[21]

[21] More precisely, the trading performance is calculated as the difference between the performance of the investor portfolio as reported at the end of the previous quarter and that of the investor portfolio as reported at the beginning of the previous

Adding to the local information-driven interpretation, we find that the average institution performs significantly better on trades in local ER_{1-3} but not those in local HQ stocks. Almost half of the superior performance of local ER_{1-3} investments relative to non-local ones reported in Panel A can be attributed to the quarterly changes in holdings. This difference is between 8 and 11 bps per month depending on the risk/characteristic adjustments. Again, in line with the evidence in Panel A, this effect is particularly strong for investment companies and advisers.

In sum, the evidence in Table 11 is consistent with the notion that the availability of value-relevant local information, as captured by the 10K-based local exposure measure, provides local investors an informational advantage that justifies disproportionately high portfolio allocations to local ER_{1-3} stocks. These results are particularly strong among investment companies and advisors.

In our last battery of tests, we analyze whether the patterns in portfolio-level local bias and performance depend on the degree of local exposure of the portfolio holdings. Specifically, we first examine whether the excess weights and superior performance of local ER_{1-3} investments are more pronounced for local stocks with high local exposure (Table 12) and when the investor's local portfolio as a whole has a higher and more homogeneous local exposure (Tables 13). Then, in Table 14, we test directly whether the investor's local portfolio performance is a joint function of her portfolio's local information content *and* weights in local stocks.

6.3. Stocks-level Local Exposure

For the analysis reported in Table 12, first, we rank stocks available to the state institutional investor by the degree of their local exposure, i.e., using the annual firm-state citation shares. Then, we classify stocks in each state-year's top tercile of citation share as *high local exposure stocks.* We repeat this procedure separately for local HQ, local ER_{1-3}, and non-local stocks. Finally, we segment each state investor's location-based (local HQ, local ER_{1-3}, or non-local) holdings by their local exposure (Top

quarter. Because the returns from the part of the portfolio that does not change over the quarter cancel out, the measured trading performance is solely attributed to the part of the portfolio that changes during the previous quarter.

Tercile vs. Others) as just described.[22]

Panel A of Table 12 reports the mean local bias for each location type. Examining equal-weighted means, we find that the average institutional investor displays a statistically significant local bias regardless of the location type for high local exposure stocks (i.e., stocks in the Top Tercile of firm-state citation share), while there is no evidence of local bias for other local stocks. For the average investor, the mean differences in local bias across local exposure subsamples are statistically significant at conventional levels. However, other notable patterns emerge in Table 12, which reinforce our earlier inference. First, the average institution's local bias in high local exposure firms is approximately three times larger among ER_{1-3} stocks than HQ ones. Moreover, for the aggregate institutional portfolio (i.e., dollar-weighted means), there is evidence of local bias only among high local exposure ER_{1-3} stocks.

In the remainder of Table 12, we benchmark the performance of local HQ and ER_{1-3} subportfolios that include high local exposure stocks against the performance of either the non-local portfolio with the same local exposure rank or the corresponding local subportfolio with low exposure stocks. We focus on the subsequent quarter performance of quarter-end holdings in Panel B and on the subsequent quarter performance of net quarterly changes in holdings in Panel C.

The results across these two panels show that the local exposure of individual holdings, as captured by the firm-state citation share, is an important determinant of the local holdings performance. This is especially true when we control for variation in stock characteristics (see last two columns of Panels B and C). Focusing on the characteristic-adjusted returns, the average institutional investor's local ER_{1-3} holdings with high local exposure outperform her non-local holdings by approximately 40bps in the next quarter and her holdings in local ER_{1-3} stocks with low citation share by more than 30bps. Moreover, as implied by the evidence in Panel C, the superior performance of the average investor in local ER_{1-3} stocks with high local exposure is largely due to her quarterly trading, i.e., changes in portfolio holdings during the quarter.

[22] This classification results in six subportfolios for each state investor. These subportfolios are the unit of observation in our analysis: Local HQ (stocks)/Top Tercile (of firm-state citation share) and Local HQ/Others; Local ER_{1-3}/Top Tercile and Local ER_{1-3}/Others; and Non-Local/Top Tercile and Non-Local/Others.

While we find somewhat similar patterns among the average investor's local HQ stocks, the effect of firm-state local exposure on local HQ portfolio performance is weaker both statistically and economically. Further, in contrast with the ER_{1-3} results, we find no evidence of superior performance in local HQ portfolio quarterly trades, regardless of their degree of local exposure.

Overall, the evidence in Table 12 is consistent with our conjecture that local investors' informational advantage increases with the availability of value-relevant local information about the stock, as captured by the firm-state citation share. Moreover, consistent with our earlier results, we find that this link is particularly strong for local ER_{1-3} stocks, as opposed to local HQ firms.

6.4. Portfolio-level Local Information Content

We now turn to the relation between investors' local portfolio performance and *portfolio-level* local exposure. With this analysis we aim to examine two potential effects. The first is the *direct effect* of the HQ or ER_{1-3} subportfolio's local exposure on the subportfolio's own performance. The second is the *indirect* (*spillover*) *effect* of the HQ or ER_{1-3} subportfolio's local exposure on the performance of the other local (ER_{1-3} or HQ) subportfolio's performance.

Our examination of portfolio-level local exposure is motivated by the evidence of return correlations among firms that share economically relevant locations and of corresponding local commonalities in firm fundamentals - in Section 3. Jointly, these local commonalities suggest the existence of systematic local factors that affect local firms and/or systemic relations among local firms (e.g., customer-supplier linkages). Based on this evidence, we conjecture that an informed local investor would be able to exploit information about some local stocks in her portfolio to trade profitably on other local stocks.

To examine whether institutions exploit locally gathered information as we conjecture, we first construct a portfolio-level measure of *local information content* (LIC). This new measure is based on the first and second moments of the firm-state citation shares of stocks in the investor portfolio. Specifically, we sort investor local portfolios based on how the mean and standard deviation of the citation shares of their local HQ or ER_{1-3} subportfolio stocks compare with their respective state-year medians. Then, we classify the investor subportfolio as containing a *homogeneously high LIC*, if the subportfolio stocks have above-median mean *and* below-median standard deviation of the investor's state citation share.

In Table 13, we examine whether the excess weight and performance of each local (Local HQ or Local ER_{1-3}) subportfolio vary with the investor portfolio LIC. Local subportfolios with homogeneously high LIC should be associated with superior access to local value-relevant information *across* the investor's local holdings. Therefore, we expect subportfolios with homogeneously high LIC to have superior (excess) performance.

The evidence in Table 13 reveals several interesting patterns. First, there is evidence of a subportfolio-level direct effect for local ER_{1-3} holdings. Consistent with our conjecture, local ER_{1-3} subportfolios with homogeneously high LIC experience superior average performance of 46.9 bps per month (Panel B). In contrast, we find no such effect for local HQ subportfolios (Panel A).

Second, there is also some evidence of an indirect effect, although this effect is unidirectional. The performance of the average investor's local ER_{1-3} subportfolio is higher when her local HQ subportfolio has a homogeneously high LIC (Panel A). This evidence is consistent with the results in Section 3, which indicate that firms with overlapping geographical exposure are affected by common local factors. In combination, both types of homogeneously high LIC subportfolios (i.e., HQ and ER_{1-3}) positively affect the aggregate local performance, but the effect is coming mostly, if not exclusively, from the performance of local ER_{1-3} subportfolios.

In sum, the portfolio LIC-based results indicate that an investor's local informational advantage depends on the local information content of the investor's portfolio. In the next subsection, we examine whether local investors exploit the potential information advantage that results from the portfolio-level local information content. Specifically, we test whether an investor's local performance depends more strongly on her portfolio's local information content when her investments are more heavily tilted toward local stocks.

6.5. Joint Effects of Portfolio Local Bias and LIC on Local Performance

In our analysis of the joint effect of an investor's portfolio local bias and local information content on her local performance, we focus on three related aspects. First, we test whether the magnitude of the investor's local bias explains the performance of her local holdings. If a local informational advantage induces her to overweight local stocks, then the investor's local performance should increase with her local bias. Second, we test whether the investor's local performance depends on her portfolio's LIC (local information content). If the investor's local performance reflects her access to local value-relevant information, then her local performance should increase with her portfolio LIC. Third, we test whether the two effects are *complementary*. We conjecture that higher local bias reflects a higher local information advantage when the portfolio LIC is higher. Therefore, we expect that the interaction of the portfolio local bias and LIC would be associated with higher local performance.

Table 14 summarizes the results. The regression estimates in the table support our conjecture that the availability of local portfolio-level value-relevant information yields a local informational advantage that institutional investors exploit through their local ER_{1-3} portfolio decisions. In particular, we find that the performance of local ER_{1-3} subportfolios depends directly on the level of portfolio bias in local ER_{1-3} stocks. Moreover, this direct link is stronger when the local ER_{1-3} subportfolio has a homogeneously high LIC. In particular, the point estimates suggest that the link between local ER_{1-3} bias on local ER_{1-3} performance is almost twice as strong when the portfolio has a high LIC (i.e., (2.360 + 2.583) vs. 2.583). In line with other evidence throughout our study, we find no such pattern for local HQ subportfolios.

In sum, the evidence in Table 14 shows that the direct relation between portfolio LIC and performance is stronger when an investor allocates greater weight to her local investments. This supports our main conjecture that access to valuable local information drives institutional investors' local ER bias. In this regard, our tests consistently indicate that the 10K-based firm-state measure of local exposure reflects the availability of valuable local information that institutional investors can access and exploit.

7. Summary and Conclusion

In this study, we use a multi-dimensional measure of firm location to examine the local bias and informational advantage of U.S. institutional investors. We identify U.S. states that are economically relevant for a firm through a textual analysis of its annual 10-K filings. The premise of our investigation is that mentions of U.S. states in a firm's annual financial report identify locations where the firm has meaningful economic interests and its reported performance is determined. Using the citation counts in each report, we develop a firm-state 10K-based measure of local exposure, i.e., citation share of the state in the firm's 10-K filing. Our measure relaxes the assumption in the existing literature that links each firm with only its HQ location. Instead, it allows a firm to have multiple locations, potentially including the HQ location, and varying degrees of local exposures across states. This broader approach overcomes the recurring criticism of geography-based studies that a firm's headquarters location may not capture the true geographical location of the firm.

Using the multi-dimensional measure of local exposure, we document a series of novel findings. In the first part of the paper, we find support for the premise of our empirical strategy. In particular, the 10K-based measure of local exposure is useful to identify the local component of firms' stock and operating performance. Moreover, we show that local factors identified using the 10K-based measure explain a substantial part of variation in stock returns. Most important for our purposes, we demonstrate that the 10K-based local exposure measure explains the systematic firm-level variation in the local component of stock returns.

In the second part of the paper, we provide evidence consistent with the notion that the spatial distribution of information about firms' economic interests generates location-dependent information asymmetries, which in turn affect institutional investors' portfolio decisions and performance. Specifically, we find that excess local institutional ownership increases with the state's relevance for the firm, independent of headquarters location. Consistent with a local information advantage outside of the headquarters location, local non-HQ institutional trades predict future stock returns. Further, investor proximity to local non-HQ information sources has a larger impact on institutional excess ownership and trading performance when firms are harder-to-value. Importantly, the strength of the link between local institutions' portfolio decisions and subsequent returns depends directly on the degree of potential availability of local information.

Overall, our evidence highlights the importance of recognizing the multi-dimensional nature of firms' geographical location. Beyond our study, the measure of local economic exposure that we develop should prove useful in future research that studies local ownership and local information generation, as well as other strands of geography-based investment, asset pricing, and corporate finance research. Relatedly, it would seem natural for international studies to consider the effects of non-HQ countries, particularly for multinational companies whose economic interests are dispersed globally.

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Appendix A Description of Form 10-K's Items 1, 2, 6, and 7

The U.S. federal securities laws require companies issuing publicly traded securities to disclose information on an ongoing basis. Notably, Section 13 or 15(d) of the Securities Exchange Act of 1934 requires companies with more than $10 million in assets whose securities are held by more than 500 owners to file an annual report (Form 10-K) providing a comprehensive overview of the company's business and financial condition. A 10-K must be filed within 90 days after the end of the fiscal year covered by the report. This form contains information such as company history, organizational structure, executive compensation, equity, subsidiaries, and audited financial statements, among other information. Regulation S-K outlines the reporting requirements for various SEC filings used by public companies, including Form 10-K. Although this standardized form contains four parts and 15 schedules, for the purpose of our analysis, we focus on Items 1, 2, 6, and 7.

Section 229.101 of Regulation S-K requires that Item 1 in Form 10-K summarizes the general development of the business of the filing company, its subsidiaries and any predecessor(s) during the prior five years. The business description is expected to include all material information about the company's (i) principal products or services and their markets; (i) distribution methods; (iii) competitive position in the industry and methods of competition; (iv) sources and availability of raw materials, and principal suppliers; (v) dependence on major customers; (vi) patents, trademarks, licenses, franchises, concessions, royalty agreements, or labor contracts; (vii) need for any government approval of principal products or services; (viii) effect of existing or probable regulations; (ix) research and development activities; and (x) number of employees. This item also includes any potentially material litigation risk.

Item 2 of Form 10-K, pursuant to Section 229.102, lists the location and general character of the principal plants, mines, and other materially important physical properties of the company and its subsidiaries. In principle, this item should include any information that will inform investors as to the suitability, adequacy, productive capacity and extent of utilization of the facilities by the company, although a detailed description of the physical characteristics of individual properties is not required.

Section 229.301 requires for Item 6 of Form 10-K to supply in a convenient and readable format selected financial data that highlight certain significant trends in the company's financial condition and operating performance. Subject to appropriate variation due to the nature of the business, the following items are expected to be included: (i) net sales or operating revenues; (ii) income (loss) from continuing operations; (iii) income (loss) from continuing operations per common share; (iv)total assets; (v) long-term obligations and redeemable preferred stock (including long-term debt, capital leases, and redeemable preferred stock); and (vi) cash dividends declared per common share.

Finally, pursuant to section 229.303, Item 7 of the annual report includes the management's discussion and analysis (MD&A) of the company's financial condition and results of operations. The purpose of MD&A is to provide readers with information that may help their understanding of the financial data included in the annual report. This section is intended to meet three broad objectives: (i) provide a narrative explanation of a company's financial statements that enables investors to see the company through the eyes of management; (ii) enhance the overall financial disclosure and provide the context within which financial information should be analyzed; and (iii) provide information about the quality and potential variability a company's earnings and cash flow, so that investors may assess the extent to which past performance is indicative of future performance.

Specifically, the MD&A is expected to identify current trends, deficiencies, and commitments, and highlight any expected changes pertaining to the company's liquidity and capital resources. Moreover, it should identify unusual events or significant economic changes that materially affected the reported operating results, and describe any known trends or uncertainties that have had or are expected to have a favorable or unfavorable impact on the company's operations. Finally, the discussion should provide explicit information regarding off-balance sheet arrangements that have or are likely to have an effect on the company's financial performance.

Appendix B Excerpts from Items 1, 2, 6, and 7

Following are some representative examples of excerpts from Form 10-K filed during the 1996 to 2008 period and available on the SEC's EDGAR system. Specifically, we report those passages appearing in Items 1, 2, 6, or 7 of the annual report that make any explicit reference to one of the 50 U.S. states or the District of Columbia. For ease of presentation, the referenced locations are underlined.

Example 1: RELM WIRELESS CORPORATION

CIK 0000002186, Form 10-K filed on 2008-03-05

Item 1 - Business:... Our principal executive offices are located at 7100 Technology Drive, West Melbourne, Florida 32904... In June 2007, one of our dealers was awarded a contract to be the exclusive supplier of BK Radio-brand P-25 digital portable radios and accessories to the West Virginia Division of Forestry...In May 2007, the California Department of Forestry (CDF) extended its contract with our authorized RELM BK Radio dealer... In May 2007, we received a certificate of award for a contract to be a supplier of two-way radio communications equipment to the state government of North Carolina...As of December 31, 2007, we had 101 full-time employees, most of whom are located at our West Melbourne, Florida facility...

Item 2 - Properties:...We lease approximately 54,000 square feet of industrial space at 7100 Technology Drive in West Melbourne, Florida...We also lease 8,100 square feet of office space in Lawrence, Kansas, to accommodate a segment of our engineering team....

Item 7 - MD&A:...We lease approximately 54,000 square feet of industrial space at 7100 Technology Drive in West Melbourne, Florida...We also lease 8,100 square feet of office space in Lawrence, Kansas, to accommodate a segment of our engineering team....

Example 2: LEHMAN T H & CO INC

CIK 0000721647, Form 10-KSB filed on 2001-06-29

Item 1 - Business:... Effective October 27, 1989, the Company acquired all of the outstanding stock of Self Powered Lighting, Inc. a New York corporation with offices in Elmsford, New York ("SPL") from an entity affiliated with two of the Company's directors... Presently, the company has one client, which operates a specialty clinic in the Los Angeles, California area... effective February 1, 1993, the Company purchased Healthcare Professional Billing Corp. (HPB), in Broomfield, Colorado...

Item 2 - Properties:... The Company presently has an administrative sharing arrangement which, among other things, provides use of other office facilities in Houston, Texas. MedFin Management Corporation leases office space in Burbank, California under an operating lease...

Example 3: ELECTRONIC TELE COMMUNICATIONS INC

CIK 0000773547, Form 10-K405 filed on 1997-03-27

Item 1 - Business:... Electronic Tele-Communications, Inc. is a Wisconsin corporation, incorporated in 1980... ETC has executive offices, manufacturing, engineering, technical services, marketing, and a regional sales office in Waukesha, Wisconsin. In addition, engineering, technical services, and corporate sales staff are located in Atlanta, Georgia, and technical services, repair services, and a regional sales office are located in Pleasanton, California... A staff of degreed meteorologists, using state-of-the-art information services and equipment, update weather forecasts at least four times daily from ETC's weather center in Atlanta, Georgia... The Company's corporate sales staff and a regional sales office are located in Atlanta, Georgia. The Company's marketing staff are headquartered in Waukesha, Wisconsin. In addition regional sales offices are located in Waukesha, Wisconsin and Pleasanton, California, and five sales representatives are at various other locations in the United States...

Item 2 - Properties:... The Company's executive offices, manufacturing and engineering facilities, technical services, marketing, and a regional sales office are located at 1915 MacArthur Road, Waukesha, Wisconsin 53188... The Company leases 87,300 square feet in seven buildings located in Atlanta, Georgia... The Company leases 12,277 square feet at 6689 Owens Drive, Suite B, Pleasanton, California 94588... The Company believes that its equipment and facilities at its California location are modern, well maintained, and adequate for its anticipated needs...

Example 4: BOEING CO

CIK 0000012927, Form 10-K filed on 1997-03-10

Item 2 - Properties: The locations and floor areas of the Company's principal operating properties at January 1, 1997, are indicated in the following table... United States: Seattle, Washington; Wichita, Kansas; Greater Los Angeles area; Philadelphia, Pennsylvania; Portland, Oregon; Palmdale, California; Huntsville, Alabama; Oakridge, Tennessee; Sunnyvale, California; Spokane, Washington; Corinth & Irving, Texas; Duluth, Georgia; Vienna, Virginia; Chicago, Illinois; Glasgow, Montana; Tulsa, Oklahoma... With the exception of the Glasgow Industrial Airport located in Glasgow, Montana, which is Company-owned, runways and taxiways used by the Company are located on airport properties owned by others and are used by the Company jointly with others...

Example 5: XEROX CORP

CIK 0000108772, Form 10-K filed on 1999-03-22

Item 2 - Properties:... The domestic facilities are located in California, New York and Oklahoma... The Company also has four principal research facilities; two are owned facilities in New York and Canada, and two are leased facilities in California and France... The Company's Corporate Headquarters facility, located in Connecticut, is leased... A training facility, located in Virginia, is owned by the Company...

Table 1
Variable Definitions

This table provides a brief description of all variables used in the empirical analysis.

Variable	Definition and Source
Panel A: Firm Geography and 10K-Based Measures	
HQ State	The U.S. state or the District of Columbia in which the firm headquarters are located. Sources: Compustat and Compact Disclosure.
Cited State	A U.S. state or the District of Columbia that is mentioned at least once in sections 1, 2, 6, or 7 of the firm's annual financial statement. Source: Securities and Exchange Commission (SEC) 10-K filings.
Distance From HQ	The distance in miles between the U.S. state's population-weighted centroid and the firm HQ State population-weighted centroid. Source: Computed.
Dist. From HQ (EW/SW)	The equal- or citation share-weighted average distance in miles between the firm's cited states' population-weighted centroids and its HQ state's population-weighted centroid. Source: Computed.
Citation Share	Ratio of the number of times a U.S. state is mentioned in the relevant sections of the 10-K to the total number of mentions across all U.S. states. Source: SEC 10-K filings.
$\sum$ Citation Share	Sum of Citation Shares across relevant states. Source: Computed.
Citation Share Rank	The ordinal ranking of the state's Citation Share in the firm-year.
Num States Cited	The number of Cited States. Source: SEC 10-K filings.
Citation Concentration	The sum of squared Citation Shares divided by the square of the sum of Citation Shares. Source: SEC 10-K filings.
Panel B: Firm-State Ownership Variables	
State Ownership$_{f,s,t}$	State-level ownership of firm f, calculated as aggregate ownership share of institutional investors in state s as a fraction of total institutional ownership share in firm f. Source: Thomson Reuters.
State Excess Ownership$_{f,s,t}$	State ownership$_{f,s,t}$ minus the aggregate ownership share of institutions in state s across all firms in quarter t. Source: Thomson Reuters.
Local HQ Excess Ownership$_{f,t}$	State excess ownership of firm f's HQ state.
Local ER$_k$ Excess Ownership$_{f,t}$	State excess ownership of firm f's non-HQ state with k^{th} Citation Share Rank.
Local HQ Own$_{f,t}$	HQ state-level institutional ownership of firm f, calculated as number of firm f's shares held by institutional investors in state s at end of quarter t as a fraction of shares outstanding. Source: Thomson Reuters.
Δ Local HQ Own$_{f,(t-1)\to t}$	Quarterly change in Local HQ Own$_f$, calculated as the difference between Local HQ Own$_{f,t}$ and Local HQ Own$_{f,t-1}$.
Local ER$_k$ Own$_{f,t}$	ER$_k$ state-level institutional ownership of firm f, calculated as number of firm f's shares held by institutional investors in state s at end of quarter t as a fraction of shares outstanding. Source: Thomson Reuters.
Δ Local ER$_k$ Own$_{f,(t-1)\to t}$	Quarterly change in Local ER$_k$ Own$_f$, calculated as the difference between Local ER$_k$ Own$_{f,t}$ and Local ER$_k$ Own$_{f,t-1}$.

Table 1 (Continued)
Variable Definitions

Variable	Definition and Source
Panel C: Stock-level Variables	
Raw Stock Return	Quarterly stock return. Source: Center for Research on Security Prices (CRSP).
Characteristic-Adjusted Return	Quarterly stock return adjusted for size, market-to-book, and momentum as in Daniel, Grinblatt, Titman, and Wermers (1997). Source: Russell Wermers' web site.
Market Cap	Stock price multiplied by the number of shares outstanding. Source: CRSP.
Past Six-Month Return	Stock return over the past six months. Source: CRSP.
Market-to-Book (M/B)	Market equity plus book assets minus book equity divided by book assets. Source: Compustat and CRSP.
Stock Price	Stock price at the beginning of the quarter. Source: CRSP.
Amihud Illiquidity	Average Amihud (2002) daily volume price impact during the quarter. Source: CRSP.
Effective Spread	Average daily effective spread during the quarter. Source: CRSP (TAQ).
Dividend Yield	Quarterly dividend divided by quarter end close stock price. Source: Compustat, CRSP.
R&D	Quarterly R&D expenses scaled by book assets at the beginning of the quarter. Source: Compustat.
S&P500	Indicator variable for stocks in the S&P500 index. Source: CRSP.
Young	Indicator variable for stocks whose IPO occurred in the prior five years. Source: CRSP.
Idio. Volatility	Volatility of residuals of annual market-model regressions of monthly stock returns. Source: CRSP.
Idio. Skewness	Skewness of residuals of annual market-model regressions. Source: CRSP.
Lottery Stocks	Indicator variable for firms that are in the top third of volatility, and the top third of skewness, and the bottom third of price. Source: CRSP.
Panel D: State-Level Variables	
State HQ Return (VW, SW)	Mean monthly stock return on the (value- or citation share-weighted) portfolio of firms that are headquartered in the state. Source: CRSP.
State ER_k Return (VW, SW)	Mean monthly stock return on the (value- or citation share-weighted) portfolio of firms for which the state is a Cited State with Citation Share Rank of k. Source: CRSP.
State no-ER_k Return (VW)	Mean monthly stock return on the (value-weighted) portfolio of firms for which the state is not a Cited State with Citation Share Rank of k nor the HQ state. Source: CRSP.
State HQ Index (SW)	Mean quarterly index of the citation share-weighted portfolio of firms that are headquartered in the state. Source: Compustat.
State ER_k Index (SW)	Mean quarterly index of the citation share-weighted portfolio of firms for which the state is a Cited State with Citation Share Rank of k. Source: Compustat.

Table 1 (Continued)

Variable Definitions

Variable	Definition and Source
Panel D: State-Level Variables (Continued)	
State Num HQ/ER Firms	Number of firms for which the state is either the HQ or one of the ER_{1-3} locations.
State HQ/ER Firms Mkt Cap	Aggregate equity market capitalization of firms for which the state is either the HQ or one of the ER_{1-3} locations.
Panel E: Investor Portfolio-Level Variables	
Local HQ Bias	Mean excess portfolio weight of firms headquartered in the investor state, computed as difference between the weight of local HQ firms in the investor portfolio minus the weight of local HQ firms in the market portfolio. Source: Thomson Reuters, CRSP.
Local ER_k Bias	Mean excess portfolio weight of firms headquartered in the investor state, computed as difference between the weight of local ER_k firms in the investor portfolio minus the weight of local ER_k firms in the market portfolio. Source: Thomson Reuters, CRSP.
Portfolio Raw Return	Monthly raw return on the investor portfolio. Source: Thomson Reuters, CRSP.
Portfolio Alpha	Investor portfolio monthly alpha from the Carhart (1997) four-factor model containing the market, size, value, and momentum factors. Source: Thomson Reuters, CRSP, Ken French's website.
Portfolio Char Adj Return	Investor portfolio characteristic-adjusted returns based on Daniel, Grinblatt, Titman, and Wermers (1997) method. Source: Russell Wermers' web site.

Table 2

Summary Statistics: Firm-Level 10K-Based Geographic Dispersion and Local Exposure Measures

This table reports summary statistics for 10K-based geographic dispersion and local exposure measures of U.S. state-locations mentioned in the annual financial statements of publicly traded companies between 1998 and 2008. The sample consists of 66,405 firm-year observations. Details about the variables are available in Table 1. We report the statistics for the pooled data used in the panel regressions. In Panel A, we report the summary statistics for the following variables calculated for each firm-year: *Num States Cited*, *Citation Concentration*, *Citation Share Rank* and the equal-weighted and citation-share-weighted average of the distance from the HQ state. Details about the variables are available in Table 1. In the rest of Panel A, we examine *HQ State*, the U.S. state (or District of Columbia) where the firm headquarters are located; and *Cited States*, which are U.S. states mentioned at least once in the relevant sections - 1, 2, 6, and 7 - of the firm annual financial statement - 10-K, 10-KSB, or 20-F. *Top (3) Cited State(s)* is (are) the (three) U.S. state-location(s) with the highest number of mentions in a given firm-year. *Top (3) Non-HQ Cited State(s)* is (are) the (three) U.S. state-location(s) other than the firm's HQ state with the highest number of mentions in a given firm-year. For each of these sets of states, we report the Citation Share, i.e., our 10K-based local exposure measure, the Citation Share rank within the firm year, and the distance from HQ (where appropriate). In Panel B, we perform annual sort of firms into terciles based on fiscal year-end equity market capitalization (i.e., number of common shares outstanding multiplied by stock price) and classified as *Large*, *Medium*, or *Small*. *T-stat* and *p-val* are the t-statistic and associated p-value, respectively, for the null hypothesis of no difference in means across samples, assuming unequal variances. In Panel C, firms are assigned to one of twelve Fama-French industries based on historical primary SIC codes. *T-stat* and *p-val* are the t-statistic and associated p-value, respectively, for the null hypothesis of no difference in means between industry i and industry 12 (Other, which comprises Mining, Construction, Building Material, Transportation, Hotels, Business Services, and Entertainment), assuming unequal variances.

Panel A: Firm-Level Location Relevance and Distance Measures

Variable	N	Mean	Std Dev	1st	5th	25th	50th	75th	95th	99th
All Cited States										
Num States Cited	66,405	8.09	7.81	1	2	3	5	10	24	42
Citation Concentration	66,405	0.376	0.247	0.039	0.078	0.185	0.315	0.506	0.917	1
Dist. from HQ (EW)	66,405	824.3	451.2	0	63.8	535.7	803.5	1088.9	1643.8	1874.8
Dist. from HQ (SW)	66,405	613	447.9	0	19.9	257.5	560.9	880.3	1424.9	1909.7
HQ State										
Citation Share	66,405	41.4%	28.3%	0.0%	2.1%	17.9%	36.8%	62.5%	94.7%	100%
Citation Share Rank	66,405	1.85	1.95	1	1	1	1	2	6	10
Top Cited State										
Citation Share	66,405	46.1%	24.2%	7.8%	13.3%	27.1%	41.7%	61.8%	94.3%	100%
Distance from HQ	66,405	412.8	720.6	0	0	0	0	607.7	2318.1	2560.7
Top 3 Cited States										
$\sum$ Citation Share	66,405	84.0%	20.1%	27.0%	41.9%	71.4%	93.8%	100%	100%	100%
Citation Share Rank	66,405	1.87	0.38	1	1	1.67	2	2	2.43	2.67
Distance from HQ	66,405	744.5	479.3	0	52.7	364.9	724	1050.9	1613.8	1965.7
Top Non-HQ Cited State (ER_1)										
Citation Share	64,360	21.6%	15.7%	2.0%	3.4%	10.5%	17.6%	28.6%	50.0%	75.0%
Citation Share Rank	64,360	1.66	0.47	1	1	1	2	2	2	2
Distance from HQ	64,360	1,074	838.7	26.4	88.4	348.6	848.2	1675.8	2497.5	2660.9
Top 3 Non-HQ Cited State (ER_{1-3})										
$\sum$ Citation Share	64,360	49.1%	23.2%	3.3%	10.6%	33.3%	50.0%	65.2%	89.7%	100%
Citation Share Rank	64,360	2.42	0.6	1	1.5	2	2.5	2.83	3.4	3.64
Distance from HQ	64,360	1,069.2	615.8	72.9	181.8	620	985.1	1423.9	2298.5	2523.9

Panel B: Number of State Locations Cited, HQ Relevance, and Citation Concentration by Firm Size

	Large N=22,130	Medium N=22,139	Small N=22,136	Small-Medium		Small-Large		Medium-Large	
	Mean	Mean	Mean	t-stat	p-val	t-stat	p-val	t-stat	p-val
Num States Cited	11.21	7.90	5.17	−47.50	0.00	−85.91	0.00	−40.72	0.00
HQ State Citation Share	36.1%	43.1%	45.2%	7.82	0.00	34.38	0.00	26.16	0.00
Citation Concentration	0.315	0.378	0.434	24.02	0.00	52.88	0.00	26.95	0.00

Panel C: Number of State Locations Cited and Citation Concentration by Fama-French 12-Industries

		Num States Cited			Citation Concentration		
			Ind(i)-Ind(12)			Ind(i)-Ind(12)	
FF	Industry	Mean	t-stat	p-val	Mean	t-stat	p-val
12	Other	9.30			0.32		
11	Money	7.77	−13.96	0.00	0.47	43.47	0.00
10	Healthcare	6.13	−28.13	0.00	0.41	22.9	0.00
9	Shops	13.70	23.96	0.00	0.27	−15.15	0.00
8	Utilities	11.45	10.11	0.00	0.40	11.33	0.00
7	Telecom	10.67	6.35	0.00	0.28	−7.65	0.00
6	Bus. Equipment	5.36	−42.19	0.00	0.39	23.29	0.00
5	Chemicals	8.04	−7.13	0.00	0.33	0.97	0.33
4	Energy	9.42	0.75	0.45	0.32	−1.02	0.31
3	Manufacturing	7.58	−15.11	0.00	0.33	3.02	0.00
2	Durables	7.42	−9.91	0.00	0.35	5.05	0.00
1	Non−Durables	8.16	−7.19	0.00	0.35	6.39	0.00

Table 3

State-Level Analysis of the Local Component in Firm Performance and Investment

This table reports the regression estimates for the relation of the portfolios of firms headquartered in state s and that of firms *not* headquartered in that state. The portfolio of firms *not* headquartered in state s comprises either only firms for which state s is a top three non-HQ state in terms of citation share, ER_{1-3}, or only firms for which state s is a *not* a top 3 non-HQ state, *Not* ER_{1-3}. Portfolio index measures are either value-weighted, VW, for all firms regardless of their citation share, or alternatively citation share-weighted, SW, for the *State HQ* or ER_{1-3} portfolios. Panel A reports the relation between the average stock return of firms headquartered and *not* headquartered in state s, while Panel B reports the relation between the average operating performance of firms headquartered and *not* headquartered in state s. Columns 1-3, *State-Level Time-Series*, in each panel report mean coefficients and associated t-statistics of state-level time-series OLS estimates. Columns 4-6, *Month* (or *Quarter*)*-Level Cross-Sections*, report mean coefficients of Fama and MacBeth (1973) monthly (in Panel A) or quarterly (in Panel B) cross-sectional regression estimates. Excess Market Return, SMB, HML, and UMD are the Carhart (1997) monthly four factors available on Ken French's website. The t-statistics are reported in parentheses; those in columns 4-6 are adjusted based on Newey and West (1987) correction for heteroscedasticity and serial correlation.

Panel A: Monthly Stock Return Indexes

Estimation Level:	State-Level Time-Series			Month-Level Cross-sections		
Portfolio Firms:	ER_{1-3}	Not ER_{1-3}	ER_{1-3}	ER_{1-3}	Not ER_{1-3}	ER_{1-3}
Weight Scheme:	VW	VW	SW	VW	VW	SW
	(1)	(2)	(3)	(4)	(5)	(6)
State HQ Return	0.1022	−0.0191	0.3220	0.0358	−0.0073	0.0814
	(5.88)	(−4.07)	(10.53)	(4.24)	(−19.87)	(6.82)
Excess Market Return	0.8562	1.0202	0.6622			
	(35.81)	(209.34)	(24.94)			
SMB	−0.0338	0.0009	0.5275			
	(−1.42)	(0.99)	(23.18)			
HML	0.0576	0.0011	0.1466			
	(1.66)	(1.02)	(4.97)			
UMD	−0.0150	−0.0008	−0.1479			
	(−1.39)	(−1.71)	(−11.74)			
State Num HQ/ER Firms	−0.0048	0.0001	−0.0012	−0.0003	0.0000	0.0007
	(−1.47)	(1.23)	(−0.41)	(−0.27)	(0.96)	(0.71)
State HQ/ER Firms Mkt Cap	−0.0055	0.0002	−0.0042	0.0005	0.0000	−0.0002
	(−6.80)	(4.50)	(−3.00)	(0.57)	(0.19)	(−0.26)
Avg R^2	72.35%	99.94%	75.35%	12.49%	22.30%	14.00%
Num State Time-Series	50	50	50			
Num Monthly Cross-Sections				168	168	168

Panel B: Quarterly Portfolio Sales, Profitability, and Investment Indexes

Estimation Level:	State-Level Time-Series			Quarterly-Level Cross-sections		
Portfolio Firms:	ER_{1-3}	ER_{1-3}	ER_{1-3}	ER_{1-3}	ER_{1-3}	ER_{1-3}
Weight Scheme:	SW	SW	SW	SW	SW	SW
Index Variable:	$\frac{Sales}{Asset}$	$\frac{Ebitda}{Asset}$	$\frac{Capex}{Asset}$	$\frac{Sales}{Asset}$	$\frac{Ebitda}{Asset}$	$\frac{Capex}{Asset}$
	(1)	(2)	(3)	(4)	(5)	(6)
State HQ Index (SW)	0.2806	0.3170	0.3354	0.0599	0.2837	0.1898
	(5.02)	(7.15)	(7.72)	(3.86)	(13.30)	(7.98)
Market Index (VW)	0.9175	0.9536	0.7383			
	(7.13)	(5.53)	(7.00)			
State Num HQ/ER Firms	−0.0353	−0.0149	−0.0007	0.0033	−0.0035	−0.0034
	(−2.14)	(−3.24)	(−0.30)	(3.24)	(−9.41)	(−12.94)
State HQ/ER Firms Mkt Cap	0.0018	0.0031	−0.0001	−0.0041	0.0006	0.0010
	(0.51)	(2.13)	(−0.11)	(−4.97)	(1.94)	(4.98)
Avg R^2	53.07%	49.74%	55.28%	6.60%	23.41%	24.12%
Num State Time-Series	50	50	50			
Num Qtr Cross-Sections				44	44	44

Table 4

Local Return Factors, 10K-Based Measures, and Market-Based Local Exposure Measure

This table reports the marginal impact of local factors as well as the relation between market-based stock localness and location measures from Financial Statements. Panel A reports measures of goodness of fit of pricing models estimated using 36-month rolling-windows stock-level regression that include various location-based stock market indexes, some of which are defined on the basis of our 10K-based local exposure measure, as follows: Model (1) includes the typical U.S. market index; Model (2) includes HQ Index, the *local* market index estimated using only firms that share an HQ state with the firm; Model (3) includes HQ/ER_{1-3} Index, the *local* market index estimated using only firms that either share an HQ state with the firm or have an ER_{1-3} location in the firm's state; and Model (4) includes HQ/ER_{1-3} Index plus Non-HQ/ER_{1-3} Index, the *non-local* market index that includes firms that do not have HQ or ER_{1-3} location in the firm's state. We report the mean and median of pricing error (|a|), the value-weighted pricing error (VW |a|), and explanatory power (Adj. R^2). We also examine models that include the Fama and French (1992) and Carhart (1997) factors (obtained from Ken French's website). We report averages weighted by market cap in Panel A1, and unweighted averages in Panel A2. Panel B reports regression estimates for the relation between firm-level market-based measures of local exposure and 10K-based measures of local exposure and geographic dispersion. Columns 1-4, *Year-State*, report mean OLS coefficients and associated t-statistics of Fama-MacBeth (1973) regressions estimated separately for each state-year cross-section of firms. Columns 5-8, *Year-Firm*, report mean OLS coefficients and associated t-stats of Fama-MacBeth (1973) regressions estimated separately for each firm-year cross-section of states. The dependent variables, *Local Beta* and *Delta* R^2, are based on firm-yearend-*state* 36-month rolling-windows regression estimates of the following three models. First, for each firm-yearend we estimate the model:

$$\begin{aligned}(1)\ RETRF_{i,t} &= a_{i,t} + b_{MKT,i,t} * VWMKTRF_t \\ &+ b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t}.\end{aligned}$$

Then, separately for each firm-yearend-*state*, we estimate two augmented models that include the excess returns of local firms (i.e., those with ER_{1-3} or HQ location in state s):

$$\begin{aligned}(2a)\ RETRF_{i,t} &= a_{i,t} + b_{LOC,i,t,s} * VWLocalRF_{-i,t,s} + b_{MKT,i,t} * VWMKTRF_t \\ &+ b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t}. \\ (2b)\ RETRF_{i,t} &= a_{i,t} + b_{LOC,i,t,s} * SWLocalRF_{-i,t,s} + b_{MKT,i,t} * VWMKTRF_t \\ &+ b_{SMB,i,t} * SMB_t + b_{HML,i,t} * HML_t + b_{UMD,i,t} * UMD_t + e_{i,t}.\end{aligned}$$

where is $VWLocalRF_{-i,t,s}$ ($SWLocalRF_{-i,t,s}$) is the value-weighted (citation share-weighted) average monthly excess return for the portfolio of local firms in state s, excluding firm i; and $VWMKTRF_t$, SMB_t, HML_t, and UMD_t are the Carhart (1997) monthly four factors available on Ken French's website. The dependent variable *Local Beta* is defined as the firm-year-*state* estimate $b_{LOC,i,t,s}$. The dependent variable *Delta* R^2 is defined as the difference between the firm-year-*state* R^2 of models (2a) or (2b) minus the firm-year R^2 of model (1). Additional details about other variables are available in Table 1. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

Panel A: Marginal Impact of Local Factors

	CAPM						CAPM + FF92 + Carhart97					
	|a|		VW |a|		Adj. R^2		|a|		VW |a|		Adj. R^2	
	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.
Panel A1: Weighted Model												
(1) National Integrated: US Index	1.99	1.36	1.42	1.05	9.41	6.20	2.12	1.40	1.24	0.83	13.08	10.83
(2) Local Segmented: HQ Index	1.94	1.33	1.38	1.00	9.43	5.87	2.09	1.37	1.27	0.89	12.97	10.57
(3) Local Segmented: HQ/ER_{1-3} Index	1.93	1.33	1.38	1.00	10.07	6.73	2.07	1.37	1.23	0.84	13.49	11.24
(4) Local Integrated:												
HQ/ER_{1-3} & Non-HQ/ER_{1-3} Indexes	2.00	1.36	1.41	1.02	11.49	8.49	2.15	1.43	1.27	0.86	14.33	12.28
Panel A2: Unweighted Model												
(1) National Integrated: US Index	2.20	1.45	1.28	0.88	7.27	3.39	2.20	1.37	1.36	0.85	14.09	11.79
(2) Local Segmented: HQ Index	2.14	1.42	1.32	0.90	6.84	2.31	2.20	1.39	1.35	0.92	13.07	10.54
(3) Local Segmented: HQ/ER_{1-3} Index	2.18	1.44	1.28	0.87	7.30	3.17	2.18	1.37	1.30	0.86	13.73	11.29
(4) Local Integrated:												
HQ/ER_{1-3} & Non-HQ/ER_{1-3} Indexes	2.21	1.45	1.26	0.87	8.90	5.35	2.20	1.38	1.29	0.86	14.72	12.67

Panel B: Relation between Market-Based Stock Localness and Location Measures from Financial Statements

Estimation Level:	Year-State				Year-Firm			
Local Index Weighting:	Value		Citation Share		Value		Citation Share	
Dependent Variable:	Local Beta	Delta R^2	Local Beta	Delta R^2	Local Beta	Delta R^2	Local Beta	Delta R^2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HQ State	0.0122	−0.0045	−0.0717	−0.0025	−0.0107	−0.0044	−0.0150	0.0002
	(0.73)	(−3.93)	(−3.72)	(−2.09)	(−0.24)	(−2.99)	(−0.62)	(0.18)
Cited State	0.0782	0.0023	0.0553	0.0007	0.1116	0.0008	0.1503	0.0030
	(15.84)	(8.69)	(10.51)	(2.94)	(12.18)	(4.38)	(28.68)	(15.34)
Citation Share	0.2254	0.0131	0.9770	0.041	0.8816	0.0195	0.7633	0.0182
	(7.15)	(6.90)	(23.15)	(15.82)	(12.06)	(9.17)	(18.68)	(9.94)
Num States Cited	0.0003	−0.0001	−0.0001	0.0000				
	(0.96)	(−1.67)	(−0.24)	(−0.68)				
Market Cap	0.0094	0.0000	−0.1477	−0.0025				
	(3.64)	(−1.02)	(−41.05)	(−31.02)				
Avg R^2	1.14%	0.64%	6.49%	2.34%	9.44%	6.40%	6.14%	6.22%
Num Cross-Sections	550	550	550	550	50,810	50,810	50,810	50,810

Table 5
Local Citation Share and Excess Local Ownership

This table reports the mean excess firm-level local institutional ownership as a function of the investor state's citation share and the distance between the investor's state and the firm's headquarters state. *Citation Share* is the citation share of the state in the firm's annual financial report, which is equal to the number of times the state is mentioned in the relevant sections of the financial statement divided by the total number of mentions across all U.S. states. *Distance from HQ (in km)* is the distance between the relevant U.S. state population-weighted centroid and the HQ state population-weighted centroid. Panel A reports the state-level excess ownership as a function of distance from the firm's HQ state and the state's citation share. Panel B reports the state-level excess ownership as a function of distance from HQ state and the state's citation share rank within each firm-year: ER_K is the k^{th} most cited non-HQ state in a firm annual financial statement. Additional details about the variables are available in Table 1. The sample period is from 1998 to 2008.

Panel A: Excess Local Ownership by Location Citation Share and Distance from HQ

			Distance from HQ (in km)			
Citation Share	HQ State	All Non-HQ	<500	500−1000	1000−2000	2000−5000
All States	4.73	−0.09	−0.08	−0.17	−0.10	0.05
> 0.50 (High)	14.58	6.17	5.97	5.28	7.22	6.92
0.20 to 0.50	8.35	5.28	4.88	3.90	5.11	7.79
0.10 to 0.20	5.46	3.40	3.03	2.15	3.53	5.71
0.05 to 0.10	4.07	2.02	1.76	1.22	2.17	3.44
< 0.05 (Low)	3.02	0.99	0.99	0.60	1.06	1.72
Zero	−1.62	−0.22	−0.29	−0.25	−0.20	−0.15

Panel B: Excess Local Ownership by Location Citation Rank and Distance from HQ

		Distance from HQ (in km)			
Citation Share Rank	All Non-HQ	<500	500−1000	1000−2000	2000−5000
Highest (ER_1)	5.18	4.91	4.06	5.45	6.40
Second (ER_2)	2.60	2.32	1.79	2.70	3.88
Third (ER_3)	1.13	0.91	0.91	1.04	2.01
Fourth or Fifth (ER_4, ER_5)	0.58	0.57	0.39	0.62	0.95

Table 6
Firm-level Excess Local Ownership Base Regression Estimates

This table reports average parameter estimates from Fama-MacBeth (1973) quarterly regressions for the relation between state aggregate institutional investors' excess ownership in a firm and the firm-level 10K-based geographic dispersion and local exposure measures. The dependent variable in all models is the state aggregate institutional investors' excess ownership in the firm. Market-based local exposure measure (Local Beta or Delta R-square), in columns 4-7, is defined in Table 4. The full model, in column 8, includes the following firm characteristics: stock price at quarter-end (*Price*); average Amihud (2002) daily volume price impact during the quarter (*Amihud Illiquidity*); stock dividend yield (*Dividend Yield*); average daily effective spread during the quarter (*Effective Spread*); idiosyncratic volatility (*Idio Vol*); idiosyncratic skewness (*Idio Skew*); market-to-book ratio (*M/B*); market capitalization (*Market Cap*); R&D expenses scaled by assets (*R&D*); stock returns in the past six months (*Past Six-Month Return*); an indicator variable for firms that are in the top third of volatility, and the top third of skewness, and the bottom third of price (*Lottery Stocks*); an indicator variable for S&P500 firms (*S&P500*); and an indicator for firms whose IPO occurred in the prior five years (*Young*). Except indicator variables, all firm characteristics are standardized to have a mean of zero and a standard deviation of one. Additional details about the explanatory variables are available in Table 1. Each quarterly regression also includes location fixed effects for U.S. states and the District of Columbia. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

				Market-Based Localness=				
				Delta R^2	Local Beta	Delta R^2	Local Beta	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HQ State	6.055	3.175	3.139	6.378	6.375	3.040	3.038	2.390
	(7.86)	(7.12)	(7.08)	(8.09)	(8.09)	(7.59)	(7.59)	(5.73)
Cited State	0.979	0.340	0.459			0.415	0.415	0.337
	(6.26)	(4.08)	(5.16)			(6.44)	(6.42)	(3.91)
Citation Share		13.330	13.128			12.007	12.005	12.111
		(9.86)	(9.85)			(10.41)	(10.41)	(12.43)
Num States Cited			−0.012			−0.009	−0.009	−0.007
			(−8.53)			(−8.04)	(−8.10)	(−7.19)
Market-Based Localness				0.225	0.018	0.122	0.016	
				(2.47)	(2.12)	(1.31)	(1.92)	
Price								−0.021
								(−10.50)
Amihud Illiquidity								0.002
								(0.55)
Dividend Yield								−0.001
								(−0.72)
Effective Spread								−0.009
								(−3.98)
Idio. Skewness								−0.004
								(−6.91)
Idio. Volatility								0.013
								(16.92)
M/B								0.003
								(2.36)
Market Cap								0.007
								(6.42)
R&D								0.012
								(17.17)
Past Six-Month Return								−0.003
								(−2.15)
Lottery Stocks								0.017
								(8.87)
S&P 500								0.005
								(2.19)
Young								−0.010
								(−2.56)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg R^2	49.57%	50.13%	50.15%	51.08%	51.08%	51.69%	51.69%	54.73%
Avg N Firm	4,199.8	4,199.8	4,199.8	3,317.5	3,317.5	3,317.5	3,317.5	3,094.9

Table 7

Firm-level Excess Local Ownership Conditional Regression Estimates

This table reports average parameter estimates from Fama-MacBeth (1973) quarterly regressions for the relation between state aggregate institutional investors' excess ownership in a firm and firm-state 10K-based measures of geographic dispersion and local exposure, conditional on firm characteristics. The dependent variable in all models is the state aggregate institutional investors' excess ownership in the firm. Each model includes all explanatory variables in the full model, column 8, of Table VI, in addition to the interaction of the relevant firm characteristic with the firm-state 10K-based measures. Except indicator variables, all firm characteristics are standardized to have a mean of zero and a standard deviation of one. Each quarterly regression includes location fixed effects for U.S. states and the District of Columbia. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

	Firm Characteristics=						
	Size	Amihud	Young	R&D/Asset	Volatility	Skewness	Price
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
HQ State	2.447	2.784	2.309	2.386	2.387	2.400	2.396
	(5.83)	(6.55)	(6.61)	(5.85)	(6.09)	(5.73)	(5.75)
Cited State	0.389	0.893	0.288	0.446	0.436	0.345	0.340
	(4.07)	(4.36)	(3.83)	(5.69)	(4.98)	(3.93)	(3.93)
Citation Share	11.370	11.582	10.875	11.537	11.518	12.036	11.998
	(12.00)	(10.96)	(12.92)	(10.88)	(11.51)	(12.51)	(12.64)
Firm Char.	0.033	−0.252	−0.067	−0.004	−0.014	−0.018	0.001
	(9.59)	(−3.74)	(−9.91)	(−1.35)	(−2.28)	(−7.61)	(0.60)
Firm Char. * HQ State	−0.079	4.409	0.124	0.210	0.758	0.142	0.123
	(−1.24)	(3.04)	(0.49)	(1.10)	(4.05)	(1.38)	(3.07)
Firm Char. * Cited State	0.001	4.421	0.255	0.616	0.483	0.049	0.039
	(0.04)	(3.01)	(4.33)	(7.38)	(11.58)	(2.41)	(2.35)
Firm Char. * Citation Share	−4.453	6.737	3.390	−2.857	2.650	0.564	−3.518
	(−7.78)	(2.44)	(7.81)	(−7.12)	(7.43)	(2.24)	(−4.14)
Num States Cited	−0.007	−0.007	−0.007	−0.006	−0.006	−0.007	−0.007
	(−7.34)	(−8.45)	(−7.37)	(−5.58)	(−6.42)	(−6.93)	(−6.76)
Other Firm-Level Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg R2	54.77%	55.10%	54.77%	54.76%	54.80%	54.75%	54.74%
Avg N Firms	3,094.9	3,094.9	3,094.9	3,094.9	3,094.9	3,094.9	3,094.9

Table 8

Regression of Subsequent Returns on Levels of and Changes in Firm-Level Local and Nonlocal Ownership

This table reports average parameter estimates from Fama-MacBeth (1973) quarterly regressions for the relation between stock returns in quarter $t+1$ and the institutional ownership levels at the end of quarter $t-1$ and changes during quarter t, conditional on firm and institutional investor locations. In columns 1-3, the dependent variable is the firm's quarterly raw return; in columns 4-5, the dependent variable is the firm's quarterly characteristic-adjusted return based on Daniel, Grinblatt, Titman, and Wermers (1997) method. The main explanatory variables are the institutional ownership levels at quarter $t-1$, $\%Own_{(t-1)}$, and the institutional ownership changes during quarter t, $\Delta\%Own_{(t-1)\rightarrow t}$. These variables are measured separately for: institutional investors located in the firm's headquarters state, *Local HQ*; and institutional investors located away from the firm's headquarters state, *Non-HQ*. We further divide the latter group into institutional investors located in any of the firm's top three non-HQ economically relevant states, *Local* ER_{1-3}; and institutional investors located away from the firm's headquarters state and top three non-HQ economically relevant states, *Non-Local*. *No ER States* is an indicator variable equal to 1 when the firm mentions no non-HQ state in its annual financial statement, and 0 otherwise. Details about the firm characteristics are available in Table 1. The parameter estimates are reported in percentages. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

	Raw Stock Returns			Characteristic-Adjusted Return	
	(1)	(2)	(3)	(4)	(5)
Local HQ %Own$_{(t-1)}$	2.720	2.759	2.086	0.778	0.993
	(2.60)	(2.64)	(2.33)	(1.08)	(1.42)
Δ Local HQ %Own$_{(t-1)\rightarrow t}$	1.852	1.894	1.825	1.227	1.536
	(2.24)	(2.45)	(2.58)	(1.18)	(1.43)
Non-HQ %Own$_{(t-1)}$		0.039			
		(0.54)			
Δ Non-HQ %Own$_{(t-1)\rightarrow t}$		0.064			
		(0.10)			
Local ER$_{1-3}$ %Own$_{(t-1)}$			1.706	0.045	0.295
			(2.48)	(0.07)	(0.49)
Δ Local ER$_{1-3}$ %Own$_{(t-1)\rightarrow t}$			4.111	4.799	5.137
			(3.25)	(4.24)	(4.11)
Non-Local %Own$_{(t-1)}$			0.074	−0.001	0.003
			(0.96)	(−0.02)	(0.04)
Δ Non-Local %Own$_{(t-1)\rightarrow t}$			−0.051	−0.178	−0.105
			(−0.07)	(−0.27)	(−0.16)
No ER States			2.232	−0.070	−0.056
			(4.05)	(−0.23)	(−0.22)
Amihud Illiquidity	0.710	0.710	0.610	0.488	0.533
	(3.31)	(3.31)	(3.00)	(2.43)	(2.50)
Dividend Yield	0.060	0.063	0.071	−0.034	−0.013
	(0.44)	(0.47)	(0.52)	(−0.55)	(−0.18)
Idio. Skewness	0.126	0.128	0.100	0.038	−0.064
	(1.68)	(1.70)	(1.35)	(0.63)	(−0.77)
Idio. Volatility	−0.540	−0.540	−0.586	−0.232	−0.373
	(−1.19)	(−1.19)	(−1.31)	(−0.66)	(−1.18)
M/B	−0.076	−0.076	−0.074	−0.025	−0.031
	(−3.63)	(−3.62)	(−3.69)	(−0.28)	(−0.32)
Market Cap	−0.375	−0.375	−0.372	−0.021	−0.046
	(−1.72)	(−1.71)	(−1.72)	(−0.27)	(−0.54)
Past Six-Month Return	0.880	0.882	0.898	−0.158	−0.145
	(2.38)	(2.40)	(2.39)	(−1.16)	(−1.26)
S&P 500	1.608	1.585	1.833	0.873	0.760
	(2.98)	(2.90)	(3.68)	(2.15)	(2.04)
Young	−0.758	−0.752	−0.833	−0.286	−0.387
	(−1.87)	(−1.87)	(−2.03)	(−1.28)	(−1.61)
Lottery Stocks					0.554
					(2.22)
Effective Spread					−0.457
					(−3.01)
R&D					0.906
					(1.13)
Avg. N	3,262	3,262	3,262	3,048	3,048
Avg. R^2	7.89%	7.96%	8.26%	2.67%	3.64%

Table 9

Regression of Subsequent Returns on Changes in Local and Nonlocal Ownership, Conditional on Firm Characteristics

This table reports average parameter estimates from Fama-MacBeth (1973) quarterly regressions for the relation between firm stock returns in quarter $t+1$ and quarter t changes in firm's institutional ownership at HQ and ER_{1-3} firm location, and their respective interaction with indicator variables for the following firm characteristics: small (below-median market capitalizion), illiquid (above-median Amihud illiquidity measure), young (stocks whose IPO occurred in the prior five years), R&D intensive (above-median R&D over asset ratio), volatile (above-median idiosyncratic stock return volatility), skewed (above-median idiosyncratic stock return skewness), and low priced (below-median stock price). In all models, the dependent variable is the firm quarterly characteristic-adjusted stock return based on Daniel, Grinblatt, Titman, and Wermers (1997) method. All models include all the explanatory variables reported in column 5 of Table 8. The parameter estimates are reported in percentages. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

	Firm Characteristic Indicator=						
	Small	Illiquid	Young	R&D Intensive	Volatile	Skewed	Low Priced
Δ Local HQ %Own$_{(t-1)\to t}$	1.261	−1.259	0.824	−1.654	2.700	0.582	−0.315
	(1.59)	(−1.87)	(0.70)	(−1.47)	(1.97)	(0.63)	(−0.33)
Δ Local HQ %Own$_{(t-1)\to t}$ * Char. Ind.	−4.970	3.709	−1.798	4.136	−5.846	0.129	0.364
	(−2.79)	(2.46)	(−0.57)	(1.12)	(−2.92)	(0.06)	(0.16)
Δ Local ER$_{1-3}$ %Own$_{(t-1)\to t}$	3.507	3.534	3.099	3.698	2.987	1.572	3.926
	(3.33)	(2.46)	(1.76)	(2.71)	(1.92)	(0.91)	(2.98)
Δ Local ER$_{1-3}$ %Own$_{(t-1)\to t}$ * Char. Ind.	3.417	3.207	4.273	3.767	4.082	5.556	0.745
	(1.99)	(3.02)	(2.13)	(1.75)	(2.05)	(2.74)	(0.54)
Local and Non-Local %Own$_{(t-1)}$ Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Δ Non-Local %Own$_{(t-1)\to t}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg. N	3,048	3,048	3,048	3,048	3,048	3,048	3,048
Avg. Adj. R2	4.40%	4.35%	4.37%	4.39%	4.41%	4.38%	4.37%

Table 10

Economic Relevance and Institutional-Level Local Bias Estimates

This table reports institution-level local bias estimates for the full sample of institutions and various subsets of institutions. For each institutional investor's portfolio, we divide the holdings into three mutually exclusive categories: (i) *Local HQ*: firms headquartered in the investor's state; (ii) *Local* ER_{1-3}: firms for which the investor's state is one of the top three non-HQ states in terms of citation share; and (iii) *Non-Local*. We report the mean local bias, i.e., the mean excess portfolio weight – the actual weight in the investor portfolio minus the weight in the hypothetical market portfolio for locally headquartered firms or firms with local economic exposure. We report the equal-weighted and dollar-weighted averages across institutions. The dollar-weighted averages use the size of the institutional portfolios to weight the institutional-level local bias quarterly observations. Panel A reports the local bias estimates for the full sample. The rest of the table reports the local bias estimates for various subsamples of institutional investors based on: 13(f) institutional types, Panel B; portfolio value quintile, Panel C; and the number of stocks in the portfolio, Panel D. Additional details about the variables are available in Table 1. The sample period is from 1998 to 2008.

		Equal-Weighted			Dollar-Weighted		
	% Tot	HQ	ER_{1-3}	HQ+ ER_{1-3}	HQ	ER_{1-3}	HQ+ ER_{1-3}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: All Institutions							
Full Sample	100	1.78	3.18	4.96	−0.61	2.97	2.36
Panel B: Institution Type Subsamples							
Inv. Companies & Advisors	55.49	1.66	3.24	4.90	−0.48	3.00	2.52
Pension & Endowment Funds	6.91	0.24	2.93	3.17	−1.52	2.73	1.21
Banks & Insurance Firms	35.7	2.18	3.47	5.65	−0.74	3.24	2.50
Panel C: Institution Subsamples Based on Portfolio Size							
Smallest Portfolios	0.43	2.51	2.86	5.37	2.55	2.67	5.22
Q2	1.07	2.69	3.37	6.06	3.42	3.15	6.57
Q3	2.26	1.98	3.29	5.27	2.53	3.07	5.6
Q4	6.32	1.13	3.18	4.31	1.75	2.97	4.72
Largest Portfolios	89.92	0.17	2.99	3.16	−0.91	2.79	1.88
Panel D: Institution Subsamples Based on Number of Stocks in the Portfolio							
≤100 Stocks	9.27	1.26	2.93	4.19	−0.14	3.22	3.08
101−250	11.18	2.49	3.59	6.08	1.33	3.19	4.52
251−500	11.72	1.99	3.75	5.74	0.69	3.09	3.78
501−1000	18.22	2.31	2.94	5.25	1.31	2.74	4.05
1001−2000	22.3	0.83	2.83	3.66	−1.26	2.64	1.38
>2000 Stocks	27.32	0.36	1.91	2.27	−2.19	1.78	−0.41

Table 11

Holdings and Trading Performance of Institutional Investors in Their Local and Non-Local Portfolios

This table reports the average performance of institutional investors' local and non-local holdings. For each institution with non-zero portfolio weight in local stocks, we calculate the monthly raw, characteristics-adjusted returns, and alpha of its local and non-local portfolios, as well as the performance differential between the local and non-local sub-portfolios. As in Table 10, for each institutional investor's quarterly portfolio, we divide the holdings into 3 mutually exclusive categories: *Local HQ*, *Local* ER_{1-3}, and *Non-Local*. Column (1), *Raw*, reports mean portfolio raw returns. Column (2), *Alpha*, reports mean portfolio alphas from Carhart (1997) four-factor model that contains the market, size, value, and momentum factors. Columns (3-6), *Cadj*, report mean portfolio characteristic-adjusted returns based on Daniel, Grinblatt, Titman, and Wermers (1997) method. We compute the average values of the portfolio performance estimates across all institutions each month, and then report the time-series averages of the monthly averages. The monthly averaging across institutions is value-weighted by the total dollar value of the institution's holdings at the beginning of the quarter. Columns (1-3) report results using the full sample of institutions. Columns (4-6) report mean portfolio performance for the following types of 13(f) institutions: investment companies and advisors in Column (4); pension and endowment funds in Column (5); and banks and insurance firms in Column (6). Panel A reports holdings-based performance and Panel B reports the trading-based performance. Trading-based performance is defined as the difference in monthly returns of the holdings snapshot at the end of the preceding quarter minus the holdings snapshot at the beginning of the preceding quarter. The t-statistics reported in parentheses below the Non Local performance estimates are for the null hypothesis of zero Non-Local performance. The t-statistics in brackets are for the null hypothesis of no difference in mean performance across local and non-local institutional sub-portfolios. Both types of t-statistics are adjusted for autocorrelation and heteroscedasticity following Newey-West (1987).

	All	All	All	InvAdv	PenEnd	Banks
	Raw	Alpha	Cadj	Cadj	Cadj	Cadj
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Holdings-Based Performance Estimates						
Non-Local	1.07	0.103	0.096	0.112	0.064	0.075
(t-stat)	(2.82)	(1.10)	(1.11)	(1.30)	(0.75)	(1.02)
Local HQ	1.139	0.175	0.142	0.149	0.149	0.124
[t-stat vs. Non-Local]	[1.45]	[1.59]	[1.08]	[0.62]	[1.47]	[0.75]
Local ER_{1-3}	1.293	0.358	0.266	0.362	0.134	0.143
[t-stat vs. Non-Local]	[3.21]	[3.42]	[3.28]	[3.97]	[0.91]	[1.24]
Local (HQ + ER_{1-3})	1.242	0.292	0.221	0.285	0.14	0.137
[t-stat vs. Non-Local]	[2.54]	[3.07]	[2.09]	[2.48]	[1.31]	[1.29]
Panel B: Trading-Based Performance Estimates						
Non-Local	0.093	0.028	0.051	0.078	0.057	0.033
(t-stat)	(1.31)	(0.27)	(1.02)	(0.97)	(0.82)	(0.32)
Local HQ	0.082	0.034	0.037	0.031	0.055	0.054
[t-stat vs. Non-Local]	[−0.34]	[0.05]	[−0.12]	[−0.35]	[−0.01]	[0.21]
Local ER_{1-3}	0.177	0.145	0.157	0.312	0.136	0.105
[t-stat vs. Non-Local]	[2.61]	[2.91]	[3.02]	[2.74]	[1.21]	[1.12]
Local (HQ + ER_{1-3})	0.145	0.107	0.116	0.216	0.108	0.087
[t-stat vs. Non-Local]	[1.54]	[2.21]	[1.83]	[1.97]	[0.64]	[0.54]

Table 12

Local Bias and Local Portfolio Performance of Institutional Investors, Conditional on Portfolio Firm Localness

This table reports mean institutional investor local bias, Panel A, and local and non-local portfolio performance, Panels B & C, conditional on firm-state citation share. As in Table 10, for each institutional investor's quarterly portfolio, we divide the holdings into 3 mutually exclusive categories: *Local HQ*, *Local* ER_{1-3}, and *Non-Local*. Then, within each category, we separate firms by their citation share of the investor's state: those with citation share in the top tercile, *Top Tercile*, and all others, *Others*. Panel A reports equal-weighted and dollar-weighted mean excess local holdings across quarterly institutional portfolios. The dollar-weighted means are based on the value of the institutional quarterly portfolios. Excess local holdings are defined as the actual weight of local firms in the investor portfolio minus their hypothetical weight in the market portfolio. Panels B and C report the average performance of institutional investors' local and non-local holdings. We compute the average values of the portfolio performance estimates across all institutions each month, and then report the time-series averages of the monthly averages. The monthly averaging across institutions is value-weighted by the total dollar value of the institution's holdings at the beginning of the quarter. In Panels B and C, the t-statistics in brackets are for the null hypothesis of no difference in mean performance across local and non-local institutional sub-portfolios. In all panels, superscripts a, b, and c indicate a one-sided p-value below 1%, 5%, and 10%, respectively, for the null hypothesis of no difference in means across *Top Tercile* and *Others*.

Panel A: Investor Portfolio Local Bias, Sorted by Firm-State's Citation Share

	Equal-Weighted		Dollar-Weighted	
Firm-State Citation Share:	Top Tercile	Others	Top Tercile	Others
Local HQ	1.767[a]	0.218	−0.039	−1.513
	(2.43)	(0.13)	(−0.05)	(−1.03)
Local ER_{1-3}	5.124[a]	0.821	5.501[a]	0.67
	(2.82)	(0.38)	(3.41)	(0.50)
Local ($HQ+ER_{1-3}$)	6.891[a]	1.04	5.434[a]	-0.829
	(3.25)	(0.80)	(2.62)	(0.64)

Panel B: Portfolio Holdings-based Performance, Sorted by Firm-State's Citation Share

	Raw Return		Characteristic-Adjusted Return	
Firm-State Citation Share:	Top Tercile	Others	Top Tercile	Others
Non-Local	0.99	1.025	0.107	0.095
Local HQ	1.287	1.000	0.332[b]	0.064
[t-stat vs. Non-Local]	[2.12]	[-0.15]	[2.07]	[-0.27]
Local ER_{1-3}	1.442	1.258	0.514[b]	0.177
[t-stat vs. Non-Local]	[3.57]	[2.31]	[3.22]	[1.02]
Local ($HQ+ER_{1-3}$)	1.329	1.132	0.382[c]	0.12
[t-stat vs. Non-Local]	[2.85]	[1.26]	[2.72]	[1.04]

Panel C: Portfolio Trading-based Performance, Sorted by Firm-State's Citation Share

	Raw Return		Characteristic-Adjusted Return	
Firm-State Citation Share:	Top Tercile	Others	Top Tercile	Others
Non-Local	0.091	0.095	0.054	0.048
Local HQ	0.092	0.072	0.062	0.012
[t-stat vs. Non-Local]	[0.01]	[-0.32]	[0.10]	[-0.27]
Local ER_{1-3}	0.27	0.127	0.334[a]	0.062
[t-stat vs. Non-Local]	[2.19]	[0.41]	[3.43]	[0.12]
Local ($HQ+ER_{1-3}$)	0.211	0.109	0.243[b]	0.045
[t-stat vs. Non-Local]	[1.85]	[0.17]	[2.42]	[-0.03]

Table 13

Local Bias and Local Portfolio Performance of Institutional Investors, Conditional on Portfolio Localness

This table reports mean institutional investor excess local holdings and portfolio performance conditional on the distribution of firm-state citation shares within the investor portfolio. As in Table 10, for each institutional investor's quarterly portfolio, we divide the holdings into 3 mutually exclusive categories: *Local HQ*, *Local* ER_{1-3}, and *Non-Local*. Then, we compute the state citation share mean and standard deviation for each investor's local portfolios: (1) *State-HQ Portfolio Mean Cit. Sh.* and *State-HQ Portfolio St. Dev. State Cit. Sh.* for the *Local HQ* portfolio; and (2) *State-*ER_{1-3} *Portfolio Mean Cit. Sh.* and *State-*ER_{1-3} *Portfolio St. Dev. State Cit. Sh.* for the *Local* ER_{1-3} portfolio. Finally, we sort investors based on how their HQ or ER_{1-3} portfolio citation share mean and standard deviation compare with the sample median, *High* or *Low*. We compute the average values of the portfolio performance estimates across all institutions each month, and then report the time-series averages of the monthly averages. The monthly averaging across institutions is value-weighted by the total dollar value of the institution's holdings at the beginning of the quarter. The t-statistics in brackets are for the null hypothesis of no difference in mean performance across local and non-local institutional sub-portfolios. Superscripts a, b, and c indicate a one-sided p-value below 1%, 5%, and 10%, respectively, for the null hypothesis of no difference in means across *(High)* and *(Low)* investor groups.

Panel A: Investor Portfolio, Sorted by HQ Portfolio Citation Share Mean and Std. Dev

State-HQ Portfolio Mean Cit. Sh.:	Low		High	
State-HQ Portfolio St. Dev. State Cit. Sh.:	Low	High	Low	High
Mean Local Bias				
Local HQ	−0.622	−0.720	−0.458	−0.549
	(−0.73)	(−1.01)	(−0.57)	(−0.64)
Local ER_{1-3}	2.732	2.925	3.044	3.416
	(3.13)	(3.42)	(3.19)	(3.31)
Local (HQ+ER_{1-3})	1.614	1.71	1.877	2.094
	(2.01)	(1.85)	(1.93)	(2.17)
Holding-based Mean Characteristic-Adjusted Monthly Return				
Non-Local	0.100	0.085	0.117	0.083
Local HQ	0.151	0.145	0.168	0.105
[t-stat vs. Non-Local]	[0.85]	[1.23]	[0.87]	[0.20]
Local ER_{1-3}	0.290^{c}	0.134	0.456^{a}	0.184
[t-stat vs. Non-Local]	[2.47]	[1.02]	[2.91]	[1.93]
Local (HQ+ER_{1-3})	0.244^{c}	0.138	0.360^{a}	0.158
[t-stat vs. Non-Local]	[2.12]	[1.22]	[2.72]	[1.41]
Trading-based Mean Characteristic-Adjusted Monthly Return				
Non-Local	−0.008	0.013	0.128	0.065
Local HQ	0.045	0.035	0.057	0.062
[t-stat vs. Non-Local]	[0.47]	[0.24]	[-0.45]	[-0.08]
Local ER_{1-3}	0.202	0.038	0.372^{a}	0.072
[t-stat vs. Non-Local]	[2.18]	[0.35]	[2.31]	[0.12]
Local (HQ+ER_{1-3})	0.150	0.037	0.267^{a}	0.069
[t-stat vs. Non-Local]	[1.59]	[0.33]	[1.21]	[0.21]

Panel B: Investor Portfolio, Sorted by ER_{1-3} Portfolio Citation Share Mean and Std. Dev.

State-ER_{1-3} Portfolio Mean Cit. Sh.:	Low		High	
State-ER_{1-3} Portfolio St. Dev. State Cit. Sh.:	Low	High	Low	High
Mean Local Bias				
Local HQ	−0.561	−0.519	−0.641	−0.702
	(−0.55)	(−0.47)	(−0.72)	(−0.61)
Local ER_{1-3}	2.435	2.228	4.010	3.623
	(2.67)	(2.62)	(3.45)	(3.51)
Local (HQ+ER_{1-3})	1.437	1.312	2.460	2.182
	(1.55)	(1.43)	(3.09)	(2.37)
Holding-based Mean Characteristic-Adjusted Monthly Return				
Non-Local	0.081	0.067	0.092	0.128
Local HQ	0.127	0.16	0.146	0.145
[t-stat vs. Non-Local]	[0.11]	[1.07]	[1.28]	[0.37]
Local ER_{1-3}	0.176	0.153	0.469[a]	0.263
[t-stat vs. Non-Local]	[2.04]	[1.65]	[4.35]	[2.42]
Local (HQ+ER_{1-3})	0.162	0.155	0.362[b]	0.235
[t-stat vs. Non-Local]	[1.63]	[1.33]	[3.05]	[2.19]
Trading-based Mean Characteristic-Adjusted Monthly Return				
Non-Local	0.022	0.057	0.080	0.059
Local HQ	0.053	0.024	0.052	0.081
[t-stat vs. Non-Local]	[0.31]	[−0.22]	[−0.21]	[0.29]
Local ER_{1-3}	0.141	0.070	0.319[a]	0.147
[t-stat vs. Non-Local]	[1.97]	[0.63]	[3.21]	[1.74]
Local (HQ+ER_{1-3})	0.112	0.054	0.230[c]	0.125
[t-stat vs. Non-Local]	[1.38]	[−0.16]	[1.92]	[0.86]

Table 14

Institutional Investor Local Portfolio Performance, Conditional on Portfolio Local Bias and Portfolio Localness

This table reports average parameter estimates from Fama-MacBeth (1973) quarterly regressions for the relation between institutional investor local, HQ and ER_{1-3}, performance (in excess of non-local performance) and the investor portfolio excess local weights and the localness of firms in the investor portfolio. As in Table 10, for each institutional investor's quarterly portfolio, we divide the holdings into 3 mutually exclusive categories: *Local HQ*, *Local* ER_{1-3}, and *Non-Local*. The dependent variable is the quarterly characteristic-adjusted stock return of the investor local portfolio minus the quarterly characteristic-adjusted stock return of the investor non-local portfolio. *HQ* (ER_{1-3}) *Local Bias* is the weight of firms with local HQ (ER_{1-3}) in the investor portfolio minus their weight in the market portfolio. HQ (ER_{1-3}) *CS HiMean/LoStd* is an indicator variable equal to 1 when the citation shares of the investor's state by firms with local HQ (ER_{1-3}) in the investor's portfolio have a mean above the quarter-state median investor and a standard deviation below the quarter-state median investor. The models reported in columns (3), (6), and (9) include as explanatory variables the investor state fixed effects, *State FE*, as well as investor-level time-varying characteristics, *Investor Controls*. The latter comprise indicator variables for 13(f) self-reported institutional types (i.e., Investment Companies and Advisors; Pension and Endowment Funds; Banks and Insurance Firms); the natural logarithm of the investor portfolio dollar value; and the natural logarithm of the number of stocks in the investor portfolio. The t-statistics reported in parentheses are adjusted based on Newey-West (1987) correction for heteroscedasticity and serial correlation.

	Characteristic-Adjusted Return								
	Local ER_{1-3}			Local HQ			Local (ER_{1-3} + HQ)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ER_{1-3} Local Bias	2.920	2.442	2.583	0.679	0.251	0.175	2.107	1.825	1.911
	(2.32)	(2.25)	(2.40)	(1.24)	(0.46)	(0.41)	(2.18)	(2.04)	(2.17)
ER_{1-3} CS HiMean/LoStd	0.196	0.011	−0.023	−0.017	−0.231	−0.265	0.168	0.001	−0.048
	(2.21)	(0.09)	(−0.22)	(−0.15)	(−1.70)	(−2.21)	(2.69)	(0.00)	(−0.60)
ER_{1-3} Local Bias*CS HiMean/LoStd		2.656	2.360		2.892	2.409		1.995	1.627
		(1.87)	(1.91)		(2.29)	(2.45)		(1.80)	(1.80)
HQ Local Bias	0.649	0.197	−0.001	0.565	0.727	1.133	0.779	0.33	0.44
	(0.74)	(0.30)	(−0.00)	(0.89)	(1.29)	(0.98)	(0.96)	(0.61)	(0.65)
HQ CS HiMean/LoStd	0.116	0.136	−0.004	0.079	0.034	−0.019	0.128	0.143	0.029
	(1.03)	(1.10)	(−0.03)	(0.51)	(0.21)	(−0.10)	(1.13)	(1.07)	(0.26)
HQ Local Bias*CS HiMean/LoStd		2.933	2.217		−0.957	−0.788		2.674	2.218
		(1.65)	(1.61)		(−1.21)	(−0.93)		(1.45)	(1.37)
Investor Controls	No	No	Yes	No	No	Yes	No	No	Yes
State FE	No	No	Yes	No	No	Yes	No	No	Yes
Avg N	1454.6	1454.6	1453.4	1443.7	1443.7	1442.4	1457.0	1457.0	1455.8
Avg Adj. R^2	0.97%	1.33%	10.09%	0.86%	1.15%	13.17%	0.90%	1.27%	10.31%